DOCUMENT RESUME

ED 357 430 EA 024 836

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TITLE An Analysis of the Status of Curriculum Reform and Textbook Production in Indonesia.
INSTITUTION Florida State Univ., Tallahassee. Learning Systems Inst.; Improving the Efficiency of Educational Systems Consortium.
SPONS AGENCY Agency for International Development (IDCA), Washington, DC. Bureau of Science and Technology.
PUB DATE Apr 90
CONTRACT DPE-5823-Z-00-9010-00
NOTE 92p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS *Curriculum Development; *Curriculum Evaluation; Educational Change; Elementary Secondary Education; Foreign Countries; Public Schools; Student Development; *Textbooks
IDENTIFIERS *Indonesia

ABSTRACT

Curriculum reform in Indonesia during the past 2 decades has been marked by several themes. These themes include an increased emphasis on educational outcomes, greater standardization in instructional practices, improved teacher quality, and increased locally relevant curricula. Some problems recognized include an overloading of instructional time and a widening gap between demand for instructional materials and available supplies. The Scope of Work for the team responsible for this report included the following tasks: document the curriculum development and implementation process; assess curriculum in terms of scope, sequence, and complexity; review textbook production and distribution; determine the impact of expanding school from 6 to 9 years on curriculum content and objectives; identify key curriculum problems and formulate possible solutions; and highlight priority actions the Ministry of Education can take to prepare for the sixth 5-year plan. Curriculum used in primary schools has moved toward greater student involvement and a focus on the learning process as well as content. However, the curriculum has not been coordinated across grade levels to ensure it is complementary and does not repeat earlier teachings. Three appendices contain: a list of persons interviewed; a list of 10 references; and the report "Low Cost Learning: Supplement to an Analysis of the Status of Curriculum Reform and Textbook Production in Indonesia." (JPT)

INDONESIA

An Analysis of the Status of Curriculum Reform and Textbook Production in Indonesia

April 1990

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United States Agency for International Development
Bureau for Science and Technology
Office of Education
Contract No. DPE-5823-Z-00-9010-00
Project No. 936-1084

AN ANALYSIS OF THE STATUS OF CURRICULUM REFORM AND TEXTBOOK PRODUCTION IN INDONESIA

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This work was performed under the auspices of the Improving the Efficiency of Educational Systems Project (IEES) through a contract between Florida State Univ. and the Office of Education in the Bureau for Science and Technology AID/Washington, and USAID/Jakarta.

Acknowledgements

This report was undertaken at the invitation of senior officials in Balitbang Dikbud, the Ministry of Education under the auspices of the Education Policy Planning Project. The Scope of Work for the team included the following tasks:

- document the curriculum development and implementation process;
- assess the current status of the curriculum in terms of scope, sequence and complexity;
- analyze the process of textbook production and distribution, highlighting the role of public and private sectors;
- discuss the impact of the expansion of schooling from 6 to 9 years on curriculum content and objectives;
- identify key issues in the Indonesian basic education curriculum and formulate strategy options for ameliorating problems stemming from those issues;
- highlight priority actions that might be taken by the Ministry of Education in preparation for programmatic change at the beginning of Repelita 6.

The description of the curriculum, the development and production process, and the definition of key issues have been distilled from interviews and review of document focused on issues relevant to this report. The individuals interviewed (See appendix A) range from the Director General of Primary and Secondary Education to teachers, parents and elementary students. We have attempted to record their concerns in a fashion that is succinct yet faithful to their comments. Many of the strategy options also represent ideas and suggestions that have been offered by one or more of the individuals interviewed.

During the course of our review we were struck by the similarity of concerns expressed by individuals involved in the educational process as administrators, supervisors, planners, parents, teachers and student participants. There is less agreement on what should be done than on the fact that change is needed. For this reason we have refrained from making concrete recommendations and restricted our analysis to the formulation of options.

Although the contents of this report reflect the expertise and wisdom of our informants, we assume responsibility for errors of omission and commission. Many of the options outlined in this report will require extensive investigation before they can be operationalized. We offer our observations as only a first step in the process of curriculum evolution in Indonesia. We are very grateful to all who helped in the preparation of this report for their time, insights and candor.

Table of Contents

I. Background and Purpose of Report

A. Overview

The Government of Indonesia currently uses a curriculum developed in 1984. Previous revisions occurred in 1975 and in 1968; the former a total revision of the latter. During this two decade process of change, several notable themes have marked the evolution of the national curriculum:

- an increasing emphasis on affective outcomes of schooling, especially those focused on the spirit of independence, national identity, and patriotism;
- greater standardization of the instructional process through the use of centrally-defined hours of instruction per subject, establishment of a course credit system, and the development of a consolidated statement of course objectives;
- greater reliance on prescriptive definitions of appropriate methods in an attempt to offset what is perceived to be low levels of teacher quality and innovativeness;
- increased recognition of the importance of "locally relevant" curricula as part of the overall instructional process;
- a gradual overcrowding of instructional time by the addition of required curriculum in a variety of subject areas;
- increasing disparity between the demand for quality instructional materials and the public sector's ability to produce and disseminate them in a timely, cost-effective way.

Each of these themes will be discussed throughout the course of this report.

B. Context for Change

State guidelines for development and growth are issued each five years in the form of 5 year plans (Repelitas). In Repelita V which was issued in 1988, the government set out an ambitious agenda for expanding compulsory schooling from six to nine years. The purpose of this report is to assess the implications of this expansion for curricular growth and development, and to identify curriculum-related options for strengthening the performance of students at

the primary and lower secondary level of schooling.

Significant growth and development has occurred in the Indonesian education sector in the past twenty years. Primary schooling is universal throughout the country, primary completion rates are relatively high, and millions of textbooks have been produced and teachers trained during this time. Despite these outstanding accomplishments, government officials from all sectors, parents and private sector employees have expressed concern over the quality of educational services, their general availability, and their relevancy to a dynamic economy.

In an attempt to accommodate the multiple special interest groups that have over the years, pressed for the inclusion of particular subject matter in the general curriculum, the volume of material to be taught in the primary school has steadily increased without a concomitant growth in instructional time. As enrollments have swelled the primary ranks, the government's capacity to develop and produce instructional materials, sufficient in quantity and quality has persistently lagged behind the expansion. As a result, despite the best efforts of the government, learning materials including texts are in short supply, teachers lack training in sound pedagogical techniques and are weak in subject matter, and the content and organization of the curriculum inhibits rather than facilitates learning. The underlying factors contributing to these problems will be discussed in the first two sections of this report. An analysis of the curriculum will be detailed in section IV and the implications and options associated with these findings will be discussed in section V.

II. Country Setting

A. Physical Characteristics

Indonesia is a complex country consisting of over 13,000 islands, and more than 100 linguistic dialects. With a total population of more than 170 million people it ranks fifth among the world's most populous nations. In addition to some 20 million Christians and Buddhists, it is also contains the largest number of Muslims of any nation in the world.

Indonesia has more people than its five ASEAN partners combined (Brunei, .25 million; Malaysia 16 million; Philippines, 57 million; Singapore 2.6 million; Thailand, 53.1 million). Despite its current size, Indonesia's population is expected to grow to 220 million by the year 2000 and to 275 million by 2025. With the decline in oil prices beginning in 1976, Indonesia's economic growth has slowed. Current estimates place GNP at $per capita. The social service sector is strained by the size of the population, the geographic spread of the country which places severe logistical constraints on delivery systems,and by lack of resources to improve the efficiency and quality of existing

institutions.

B. Primary Education in Indonesia

The size of its population, the cultural complexity of its citizenry and its enormous geographical area make the provision of basic education services a complex task. Both the infrastructure required to operate such a large school system and the curricular flexibility necessary to guarantee relevancy to the various needs of local populations are critical problems for education sector planners and policy makers.

In 1988 more than 3.5 million children completed primary school and more than 26 million total students were enrolled at the primary level. Approximately 11 million students are currently enrolled in Junior Secondary School (SLTP). Net primary enrollment is in excess of 90% (92% est.)-- a remarkable increase in coverage in the past twenty years. The INPRES Sekolah Dasar program begun in 1973 produced a 2 1/2 -fold increase in the budget allocation to education in Repelita II (1974-1978). As a result of this significant increase, the number of elementary school increased by 145,000; in one five-year period, 200 million textbooks were published and 40 million library books were added to the system. From 1973-1984, primary enrollments grew by over 13 million.

Although near-universal primary education has been achieved in Indonesia, population growth, the desire to reduce student/pupil ratios in remote areas, and the need to rehabilitate/replace existing facilities will keep the demand for resources devoted to infrastructure development high over the next decade. Projected growth at the primary level is illustrated in Table I.

TABLE I: Projections of Grade 1 Students, Total Primary Students and Primary Graduates for Years 1988-2000 (000's)

YEAR	1ST YEAR STUDENTS	TOTAL PRIMARY STUDENTS	PRIMARY GRADUATES
1987/88	4,538.9	26,649.9	3,405.8
1988/89	4,398.8	26,669.7	3,480.3
1989/90	4,431.4	26,676.8	3,484.0
1990/91	4,452.0	26,753.7	3,397.9
1991/92	4,460.4	26,957.5	3,404.9
1992/93	4,469.6	27,184.6	3,514.8
1993/94	4,478.3	27,325.8	3,538.2
1994/95	4,615.6	27,585.1	3,571.8
1995/96	4,779.9	27,981.9	3,611.9
1996/97	4,939.0	28,502.8	3,647.8
1997/98	5,144.8	29,194.8	3,679.8
1998/99	5,348.1	30,055.9	3,706.3
1999/00	5,566.0	31,098.9	3,795.8
2000/01	5,695.9	32,172.3	---

C. Secondary Education in Indonesia

The transition rate from primary to lower secondary is about 75% with slightly fewer females continuing their education at the secondary level than males. The largest dropout rate occurs at the juncture between lower secondary and upper secondary school (SMA). Only about 50% of a given age cohort enter the upper secondary cycle. The projected transition rate from primary to secondary school is 64.6% at present. However, net enrollment rates for the same period indicate that the government has not achieved its target objectives. The continuity between objectives and accomplishments is of particular significance during the period prior to the start of Repelita VI (1993). Achieving an SLTP cohort completion rate in excess of 90% during Repelita 6 will require a tremendous increase in the number of teachers qualified to instruct at the SLTP level, a dramatic increase in the school facilities devoted to SLTP instruction, and a substantial increase in the availability of instructional materials. In order to achieve its ambitious objectives, the government will have to rely on expansion

in both the public and private provision of schooling. As the data in Approximately 44% of SLTP students attend private institutions. This percent increases to 58% at the upper secondary (SMA) level. It is generally acknowledged that the quality of private secondary schools is lower than that of public sector schools- with the exception of a handful of elite private institutions that represent the apex of education quality. Students at private schools are responsible for the purchase of their own texts and supplementary materials. If enrollments increase, both the numbers of government-provided learning materials and those available via private production companies will have to increase dramatically.

As noted earlier, SLTPs have served as a filtering mechanism for advancement to SMA. Thus, the curricula and instructional methods are academic in orientation. Under the government's expansion plan, the role of the SLTP is being re-thought. The definition of its role has clear implications for defining the structure and content of a curriculum that can best realize particular instructional objectives.

The debate centers on three interpretations of what the government means to achieve in its expansion of schooling through the SLTP level.

1. **The SLTP as an extension of basic education.** The implication is that the role of the SLTP would be to continue to inculcate skills in essential subject areas such as reading, writing, arithmetic, and science. Proponents of this interpretation maintain that more instructional time is required to develop sufficient student mastery of the material. Opponents argue that the transmission of these skills is the task of the SDs and that the primary instruction process must be made more effective; the role of the SLTP is to teach new, higher order material, and perhaps practical skills that will better prepare the 50% of students who do not go onto the SMA to compete in the labor sector.

2. The spread of **Compulsory** education is sometimes defined as the objective of the new government plan; an objective that is independent of the content of the instruction to be given at the SLTP level. For example, proponents of compulsory SLTP education argue that the law will require all students to attend SLTP whether they want to or not. There is uncertainty over whether the government therefore has the responsibility to ensure that every student is guaranteed access to a free SLTP education and whether enrollment in alternative "compatible" institutions is a measure of compliance. Opponents argue that neither the public nor private sector has sufficient facilities or teachers to make compulsory lower secondary education feasible, let alone enforceable.

3. Access to non-compulsory lower secondary education is

defined by some policy makers as universalizing SLTP training. **The difference between compulsory and universal is more than semantic. The former implies the obligation to attend; the latter implies the opportunity to attend.** Universalizing SLTP education would be the easier of the two objectives for the GOI to accomplish: access to schools and learning materials would have to be available to all students who demanded them. Proponents argue that this interpretation provides for a more realistic time-table of expansion and does not necessitate the tremendous burden of enforcing compulsory school attendance. Opponents argue that this interpretation lacks political will and does not encourage parents to assume a greater financial and motivational role in upgrading the amount of education their children receive.

D. Higher Education in Indonesia

Indonesia has made very impressive gains in expanding the higher education sub-sector in the past 40 years. At the time of Independence on August 17, 1945, only two universities (Univ. of Indonesia and Gadjah Mada Univ.) existed in the country. Today there are 703 institutions of higher education, including 49 State universities and teacher training institutes. Each of the 27 Provinces has at least one public institution of higher education. Total enrollments have grown from 10,000 in 1950 to 1.2 million in 1987 with over 40% of students enrolled in public institutions. Thirty thousand faculty are employed, 20% of whom have M.A. or Ph.D. degrees. Between 1975 and 1986, 550 Ph.D.s and 1700 M.A. graduates were produced through a combination of overseas and domestic training.

Despite this growth, problems of access and quality characterize Indonesian higher education. Enrollments total only about 7% of the total age cohort; only 20% of high school graduates can be accommodated in public and private tertiary-level institutions. Indonesia fell short of its enrolment target of 8.23% of the university age cohort for the Five Year Plan ending in 1989. The shortfall is especially acute in scientific and technical fields. For example, the tertiary education system produces about 6,800 agriculturists (including agricultural engineers) per year but manpower projections estimate that an additional 2,800 graduates are needed annually. Student demand for access to higher education is exceptionally high. Social rates of return to higher education are estimated to be about 15% and returns to graduate education to be about 21%. Consequently, competition for admission to one of the "elite" universities (UGM, UI, IPB, ITB) is extremely vigorous.

Features that are the hallmark of the Indonesian higher education system are spelled out explicitly in the country's Long Term Higher Education Development Plan (KPPT-JP). Of special note are the following:

Table II: Organization of Curriculum in Primary Schools by Grade

Subjects	I	II	III	IV	V	VI	Total
Religion	2	2	2	2	2	2	12
Moral Pancasila	2	2	2	2	2	2	12
History of the Struggle for Independence	1	1	1	1	1	1	6
Indonesian Language	8/7	8/7	8/7	8/7	8/7	8/7	48/42
Social Studies	--	--	2	3	3	3	11
Math	6	6	6	6	6	6	36
Physical Sciences	2	2	3	4	4	4	19
Sports and Health	2	2	3	3	3	3	16
Art	2	2	3	4	4	4	19
Special Skills	2	2	4	4	4	4	20
Local Language	(2)	(2)	(2)	(2)	(2)	(2)	(12)
Total Hours per Grade Level	26 (28)	26 (28)	33 (35)	36 (38)	36 (38)	36 (38)	193 (205)

- o the role and functions of higher education is as an agent for development especially in the modernization process for progress;

- o the main function of higher education is reflected in the Tridarma concept which consists of education, research, and public service. The three aspects of Tridarma must constitute an integrated whole;

- o special division of tasks and orientation among higher learning institutions.

Of special note are the implications of expanding SLTP-level education for the preparation of students in the SMA/university track. The role of the SLTP has traditionally been one of preparation and selection of students to proceed to SMA and perhaps, eventually the university or an IKIP. However, it is as yet unclear what new, perhaps multiple emphases may be mandated to the SLTP - a number of which may ultimately have implications for university preparation and enrollment.

III. Curriculum Overview.

A. Historical Development

The curriculum currently used in Indonesian primary and lower secondary school evolved over a 25 year period in three phases:

1968-1975: A basic national curriculum was designed and implemented; it was criticized for not providing sufficient detail in terms of content requirements and for providing insufficient guidance to teachers on how to implement the curriculum;

1975-1984: The previous curriculum was completely revised and was highlighted by modifications of instructional time allotted to key subjects and by the introduction of a system of differentiated credits for particular subjects, ie, a formalized weighing of subjects by curricular importance and instructional time.

1985-present: The 1975 curriculum was revised with increased emphasis on patrictism, the affective domain, and the spirit of independence.

The current curriculum used at the SD level includes the following subjects and distributional load over the life of the primary cycle:

Instruction in a local language occurs in all grades but is optional; instructional time is for this subject is in addition to normal schooling hours. Five "local" languages have been approved by the national government as optional curricular subjects: Sundanese, Buginese, Balinese, Javanese, and Batak.

Students in grades 1-2 attend school for 3 hours daily. Instructional time per subject is based on the assumption of thirty minute blocks of time. At the SD level teachers are in charge of one class for all subjects. SLTP instruction is subject-matter based with teachers rotating among classrooms in accordance with the teaching schedule.

The SLTP curriculum consists of 12 subjects as defined in Table III below.

TABLE III

Structure of Lower Secondary Curriculum by Grade

Program	Subject	Grade/Semester						Tot.
		I		II		III		
		1	2	3	4	5	6	
General	Religion	2	2	2	2	2	2	12
	Moral	2	2	2	2	2	2	12
	Pancasila	--	2	--	2	--	2	6
	History of the Struggle for Independence	3	2	3	3	3	2	18
	Sports and Health	2	2	2	2	2	2	12
	Art							
Academic	Indonesian Language	5	5	5	5	5	5	30
	Local Language	(2)	(2)	(2)	(2)	(2)	(2)	(12)
		4	4	4	4	4	4	24
	Social Studies	4	4	4	4	3	3	22
	Math	6	4	6	4	6	4	30
	Physical Science:							
	-Biology	3	3	2	2	2	2	14
	-Physics	3	3	3	3	3	3	18
Voc. Ed.	Vocational Education	4	4	4	4	4	4	24
Total Hours per Semester		38/ 40	38/ 40	37/ 39	37/ 39	36/ 38	36/ 38	222/ 234

In 1987, the Minister of Education issued a call for an increase in the "local content" of school curriculum. There are various interpretations of what "local content" means:

- using examples that include local products, animals, etc. to illustrate conceptual points;
- developing historical and cultural text materials that focus on events and practices; unique to a particular area;

- implementing information into the instructional process concerning local industry, and recognizing the importance of occupational values and skills relevant to the immediate geographical area.

Local content may occupy as much as 20 percent of total instructional time; the remaining 80 percent must focus on government prescribed subject matter as defined in the national curriculum. Although most education practitioners agree on the importance of making the curriculum more responsive to and reflective of the great cultural and economic diversity within Indonesia, there is little agreement on:

- what level of aggregation should be defined as local, eg., sub-district, district, province or region?
- whether local content should exist as material taught outside of required subjects and distinct from them, or as a content that cuts across all subjects in the form of examples and specific applications?
- who should decide on what to include in the curriculum and how the necessary local materials will be developed and by whom?
- what quality control measures can be introduced to ensure effective transfer of information and efficient use of instructional time?
- what kinds of low-cost instructional materials can be produced and distributed to local populations?
- does the addition of more subject matter to the already over-crowded basic curriculum outweigh the possible opportunity costs of not spending more time on mastery of the basic subjects such as reading and science?

No integration timetable has been established for the introduction of the local content into the curriculum. The questions identified above and perhaps other issues deserve careful review and research before implementation of the program is begun.

B. Organization of Schooling

For the bulk of their primary schooling days, children study 11 subjects per year. In Grades 1 and 2, they attend school from 7 to 10 am, from grade 3-6 they are in school from 7 to 12:00. In grades 7-9 students attend either 6 or 7 periods per day, each of which lasts approximately 40 minutes. Indonesian and mathematics are the two subjects that are taught every day in every school.

In grades 1-3, teachers and students are permitted to use the local

languages the medium of instruction. From grades 4 onward, only Bahasa Indonesia is the authorized language of instruction although in practice, the vernacular is frequently used in commands and in explanation. In few areas of Indonesia is Bahasa Indonesia the vernacular. Yet all government texts (and private to the best of our knowledge) are written in Bahasa Indonesia. This means that most students are required to study from texts that are not written in their first (and perhaps only) language and that the language of instruction is not the same as the texts that they are studying from. This is a critical issue in the inculcation of basic literacy skills that are the fundamental building blocks of higher order learning and conceptualizing.

As noted in Table II, local language is an optional subject in all grades. There are textbooks written in Sundanese, Balinese and Javanese for use in local language instruction. These texts are developed at the Provincial level under the supervision of the National Curriculum Development Center. The production of these texts indicates that a) some local capacity exists for curriculum development, b) some facilities exist for printing and dissemination at the sub-national level , and c) printing capacity is sufficiently developed to allow for the production of materials in alternative (non-Roman) script, for eg., Javanese.

At the end of grade 6 all students are required to take a school leaving exam (EBTANAS). Although the questions are standard across the nation, scoring is done at the provincial level. Although some question can be raised about the reliability and validity of the grading procedures and the content of the exam itself, it does serve as general barometer of cross-province levels of student performance there disparity in performance of students who live in Java and other central areas compared to students who live in "outer areas", especially in the provinces of NTT and NTB as shown in Table IV. This report will not attempt to examine the reasons for these differences, but the high correlation between scores and availability of texts, the level of teacher training, and the availability of affordable lower secondary school opportunities, suggest that the availability of learning materials and their appropriate usage are critical elements in the reduction of educational inequality.

The school leaving exam serves several purposes:

- o it determines levels of student performance as measured by the test;
- o the scores from the exam are used as part of the selection process for admission to better lower secondary schools.

Although primary and secondary schooling is ostensibly free and open to all students, the stratification of students by ability and wealth begins in pre-school with parents vying to send their students to the "best" schools available to them within a defined catchment area. School leaving scores at the primary level are critical elements of the selection process into particular lower and upper secondary schools. Many schools also require prospective students to take a school entrance exam as well. Interviews with teachers and Kanwil officials reveal that these exams are as much a determinant of what is taught and how it is taught at the primary level as they are a reflection of what is actually learned.

At the lower secondary level, subjects are divided into 3 thematic areas: General education, Academic curriculum, and vocational preparation. The subjects included under the general heading include religious instruction, Pancasila, the Struggle for Independence, Health & P.E. and art, Academic courses include Bahasa Indonesia, English(twice per week), Local language (only in Java, Yogya and Bali), Social studies (twice per week), math (three time per week), Science (biology and physics two per week each) and vocational education (twice per week as an elective- if facilities are absent or there is no teacher, the subject is not offered).)

At the completion of grade 9 students take another school leaving exam. Although all SLTP graduates have the right to go on to SMA, the reality is that not enough seats are available to all prospective students in the public sector. Highly successful students from affluent backgrounds will attend the few elite private schools. Those with good exam marks will got to public school, and the rest (assuming they have resources) enroll in a private school, many of which are poor in quality and resources. The SLTP has historically been a preparatory program for upper secondary school- basically an academic stream.

At the SMA level, students are grouped into one of two programs: General Secondary Education (A program) or the Vocational stream (B program). The latter exists more in theory than in practice:there are not enough facilities, the cost of training is very high, and the linkage to better employment possibilities is tenuous. The vocational stream also overlaps with the more common Vocational Secondary schools.

The A program (academic) consists of 15 core subjects that vary by

year and a limited number of electives that increase in number with each level. The A program is divided into four sub-categories:

A1: Physical Sciences- math, biology, physics, chemistry, english, and other foreign languages.

A2: Biological Sciences- essentially the same classes as for the A1 program but with different credits attached to courses.

A3: Social Studies- Economics, Sociology, anthropology, political science, math, english, and other foreign languages

A4: Language, Literature and the Arts- this program exists in name only for this program is so low in status that students opt to go to private schools or lower prestige public schools than enroll in this course of study.

SMAs vary in quality and conduct their own testing programs in order to enroll the best students. Applications restricted to the catchment area boundaries established by local Kanwil offices.

It is imperative to understand the role that the SLTP play has played in this vertical mobility process. SLTPs have been academically oriented, non-terminal institutions. Students of low ability dropped out of school at the SD level. Under the new compulsory education law, SLTPs will be by definition take on new roles. They will be in part terminal institutions that must cater to the needs and talents of students who heretofore have been academic "failures". The changing role of the SLTPs has profound implications for the curriculum:

- o should SLTP instruction give greater importance to life skills?
- o should SLTP courses be a continuation, a reinforcement of basic skills taught in primary school?
- o should SLTP teachers emphasize new curricular areas that emphasize greater breadth of learning instead of greater depth?
- o should the SLTP curriculum stress academic tracking to target better the needs of students going into vocational or academic tracks at the SMA level?

These questions will be returned to in subsequent sections of this paper, but it should be noted here that the fundamental task of the educational establishment is to develop a fully literate population versatile in reading, writing and logical skills that will form the

basis for a proactive, independent accumulation of more specialized information. Only a careful analysis of the capacities of students matriculating from SDs and SLTPs will reveal when the necessary level of sufficiency has been reached. Published reports and interviews indicate that greater command of basic skills should be the primary emphasis of both the SD and SLTP instructional process and curriculum.

C. Formation of Curriculum

The national curriculum is developed in a top-down process. Each five years a document titled, Ketetapan is published that contains a general elaboration of the Five year national development plan (Repelita). Through this document and per the special requests of the Minister of Education, changes can be initiated in the curriculum. Over the past 15 years the major calls for curricular change have come with the seating of new Ministers. The frequency with which new orientations in curriculum have been mandated, coupled with a lengthy drafting and implementation period, has resulted in a continual state of flux for curriculum planners and teacher educators.

The frequency of change is exacerbated by a complex bureaucratic structure of curricular design, production, implementation, and evaluation.

The Curriculum Development Center (CDC) is one of 5 offices within Balitbang Dikbud. The Testing and Evaluation Center also lie within Balitbang's jurisdiction. The Textbook Center is an autonomous unit within the MOEC and is administratively responsible to the Secretary General of MOEC. Technically, the Center is responsible to the Directorate General of Primary and Secondary Education. The Center has no staff of its own to draft or revise materials. It creates teams of people drawn from institutions such as IKIPs and other universities, the DG of Primary and Secondary Education, the Curriculum and Educational Facilities Development Center and other groups. The curriculum office within each Directorate is charges with teacher upgrading, special courses, monitoring and supervision of the curriculum, and instruction. Because curriculum is designed in one office, translated into lessons in another, and implemented instill a third, the overall process often lacks integration and it suffers from bureaucratic rules and boundaries that inhibit coordination.

A National Curriculum Committee has responsibility for providing overall guidance in the design and content of curriculum. The Committee consists of representatives from the Directorates of Higher Education, Primary, and Secondary education as well as teachers, headmasters, and supervisors. Subject specialists are retained as consultants to help evaluate curriculum; these individuals are most frequently drawn from universities and IKIPs. At the secondary level, industry leaders and officials also

participate.

Once general agreement has been reached on the curricular content, a sub-committee of technical specialists defines specific learning objectives for each subject. The group consists of individuals who are curriculum developers, educators, and psychologists. The Curriculum Committee then takes the objectives defined by the technical specialists and in an iterative process, further flesh out subject content that will achieve the specific learning objectives. The Curriculum committee also makes recommendations on appropriate methodologies, and evaluation techniques. The CDC together with the Directorates write out the National Curriculum Guide. The Guide is published and distributed by the Directorates. The result is a prescriptive, but very general statement of content and process. Published as the national Curriculum Guide <u>each teacher</u> in the nation is supposed to receive a copy to guide his or her activities during the school year. Distribution of the guides is the responsibility of the respective Directorates. Limited resources have prevented the Directorates from achieving their distributional targets; the ratios of guides to schools is barely 1:1. Education officials have expressed great concern about the shortage of guides. How can teachers teach the curriculum if it is not available to them? The shortage of curricular guides raises several questions:

1. If, as many education officials maintain, the curriculum guides are essential for teachers to do their job, why are steps not taken to ensure a that 1:1 guide: teacher ratio is obtained?

2. Since most textbooks used by teachers are published by the private sector (about 75%) and since most of these texts do not follow the 1984 curriculum, how important are the guides to the day-to-day instructional process?

3. The guides provide only a very general descriptive range of possible methodologies to be employed for teaching a particular objective; would an investment in teacher guides which are instruction oriented (as opposed to curriculum guides which are objective oriented) be more effective in boosting student performance?

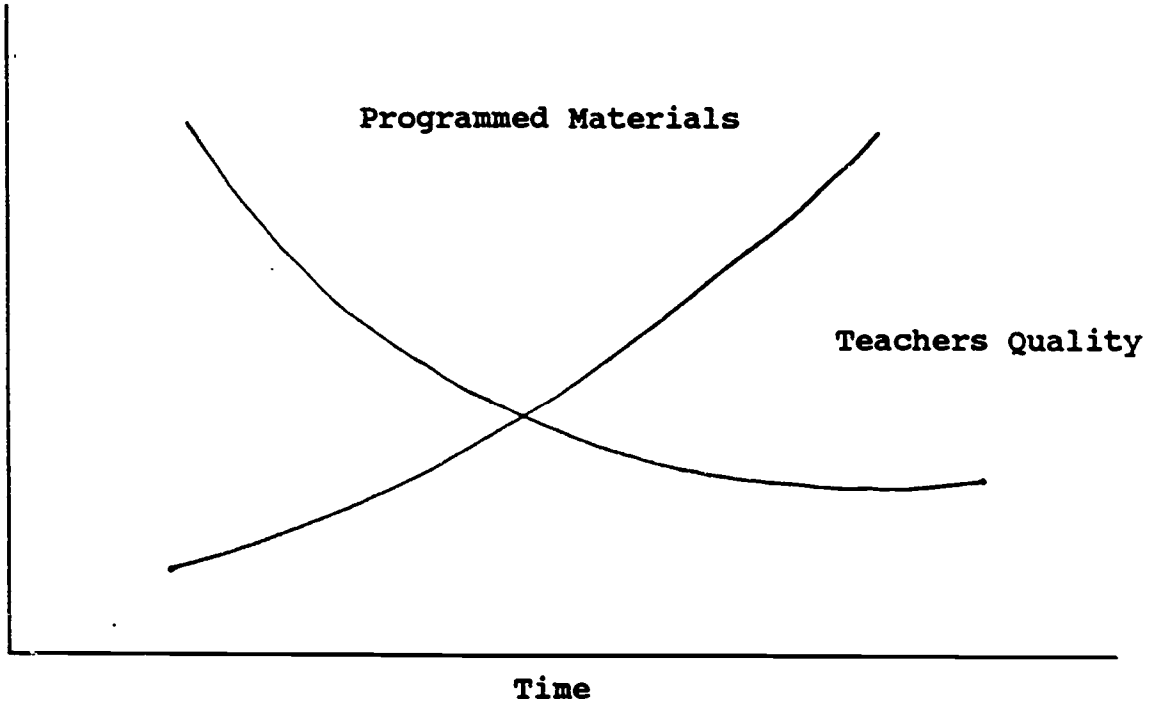
4. Until teachers have technical and pedagogical skills that instill them with a sense of confidence and security, will they be free to improvise and treat the guides as suggestive, not prescriptive tools?

There is a close link among the availability of textbook materials, instructional effectiveness and student performance. Research has shown that the single most important investment resource available to students is a textbook. However, good teachers have the intellectual skills and pedagogical resources to produce their own

materials. Teachers in Indonesia are, with rare exceptions, not of sufficiently high caliber to be effective without text materials. The training of teachers to superior competency levels requires enormous financial resources and a long period of time to upgrade all teachers. With over 1.2 million primary level teachers, Indonesia's upgrading task is enormous.

In the long run, a superior teaching force holds the key to unlocking greater quality in basic education. In the short run, the design of learning materials must reflect the need to supplement teacher skills with numerous concrete examples, step-by-step instructional strategies and pedagogical sequencing. As the quality of teachers improves, the resources committed to producing detailed, "cookbook" type materials declines. The relationship between these two inputs is depicted in Figure 1. It is our belief that short-run priority should be given to the production of Active Learning textbooks and Teacher guides that are of high quality and of sufficient number to ensure that every learner and teacher has an appropriate set of materials.

Figure 1
Relationship between Need for Programmed Instructional Materials and Availability of Quality Teachers



D. Production of Textbooks

The production of textbooks is a complex story that involves both the public and private sector capacities. Theoretically, every primary student in Indonesia is entitled to free government-produced textbooks for each of the subjects in the elementary curriculum. In reality, the government can only produce about 25% of the total texts needed annually. The shortfall is made up by the sale of books from both government and private sector sources. The design of the content for government textbooks is the responsibility of the Textbook Development Center (Pusat Perbukuan) in Balitbang Dikbud. The Center has a team of some 40 senior and junior staff who are charged with drafting materials, pilot testing and rewriting them. They are supported in their work by technical committees of subject matter specialists drawn mainly from universities and teacher training institutes (IKIPs).

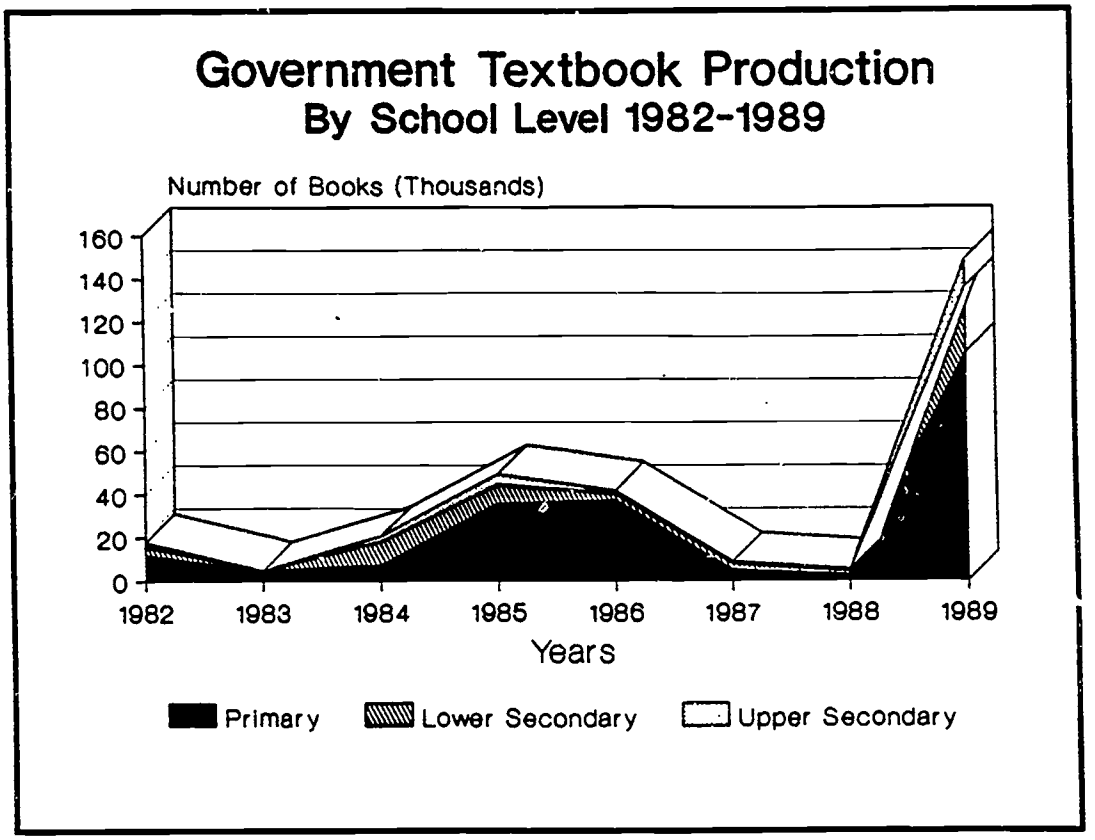
From the time work is begun on a text until it is published a period of almost 4 year elapses. There are signs that this lengthy period is being reduced, but the fact remains that the development of "model" curricular material lags far behind directives to implement a specific curriculum. For example, the most currently used curriculum was approved by the Minister in 1984. However, textbooks using the Active Learning (CBSA) format have been produced only in Science and Mathematics. Since 1982 the government has produced and disseminated a total of 105 million free textbooks. This is a notable accomplishment until it is measured against the demand: an average of over 20 million students have been enrolled annually at the primary level. Each of them studied up to 11 subjects for a total annual demand nearly double the total number of books produced in the last seven years. Although textbooks are theoretically free to all students, the Textbook Center is only preparing books for the approved, key fields of study: Moral Pancasila, Math, Science, Social Studies, Bahasa Indonesia, and English (SLTP level only).

The government printing office (Balai Pustaka) has the printing capacity to produce many more volumes annually, but has not received the material from the Curriculum Development Center to print. Figure 2 illustrates the production of texts at the primary and lower secondary level by year. The large jump in texts produced in 1985 and 1986 reflects a response to the adoption of the new curriculum and indicates that significantly more tests can be produced annually if the money and textual material are made available.

When the design work is completed at the CDC, the draft materials are sent to Balai Pustaka for printing. The average textbook takes about four months to complete. Balai Pustaka is paid for that percentage of books that will be provided at no cost to students by the government. Balai Pustaka is authorized to produce overruns which may then be sold to local retail outlets for sale to

students. All "authorized" (government produced) texts bear the same imprimatur whether given or sold to students. The Directorate of Primary and Secondary Education has responsibility for distributing the texts throughout the provinces. Texts are shipped to regions warehouses (278 throughout the provinces) and then sent to Kecamatan offices (sub-district) for further distribution to individual schools. Each warehouse has a staff of 20-30 individuals but who have basically nothing to do since most of the warehouses are empty. In light of current production levels, the government might consider selling or renting them to the private sector for their own distribution needs. At present they are an economic drain on limited resources.

Figure 2



Several factors inhibit the achievement of an equitable and efficient textbook distribution system:

- o since free texts and those that are "for sale" are indistinguishable from each other, the potential for books scheduled for free distribution to find their way into the hands of retailers is high;
- o the distribution system produces uncertainty at the school level- will they receive textbooks or not?

- o Balai Pustaka has a formula for textbook distribution that favors low income, disadvantaged areas, but poor students living in areas with relatively high aggregate income levels must purchase their texts- a cost many families can not afford

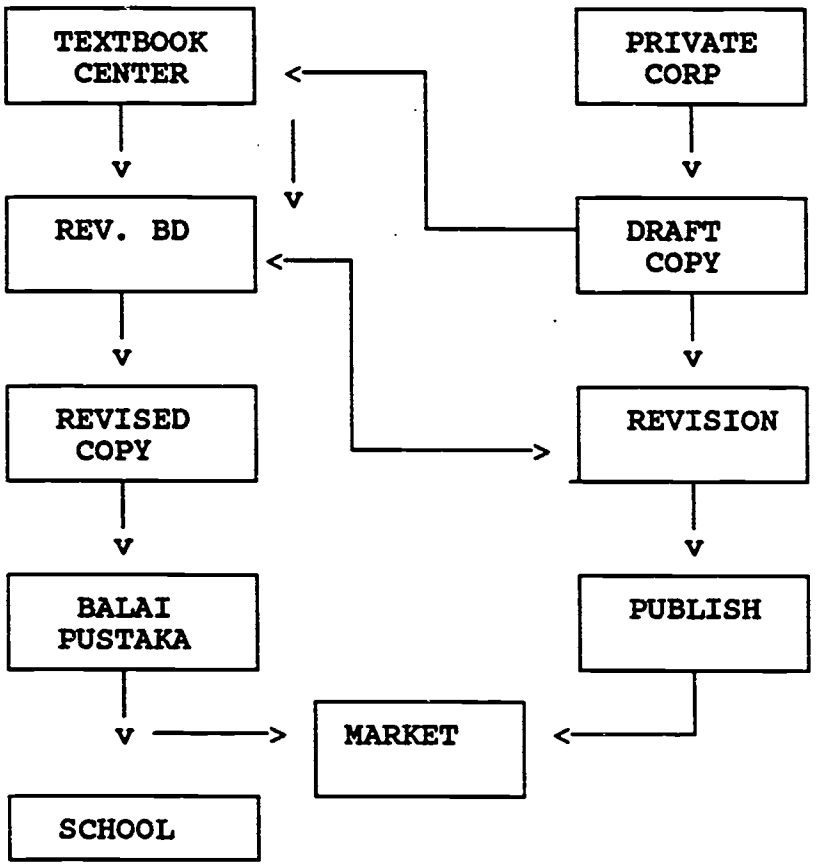
- o the centralized production and distribution system is expensive relative to labor and local transport costs

The development of curricular materials for "non-core" courses is done by the private sector. The government sets the content criteria, issues tenders and then awards contracts for best cost/technical proposals.

The private sector can also submit manuscripts for considerations as "supplementary texts"- books that, if evaluated and legalized by the Directorate of Educational Facilities, can also be used as reading or resource material. The evaluation committee is organized by the head of the textbook Center. The committee consists of people from the relevant directorates and subject-matter specialists. The committee is constituted on an as-hoc basis. The textbook review/approval board focuses its recommendation on how well the content corresponds to the national curricular guidelines. Members of the review consist of representatives from the Directorates, the Testing Center, the Textbook Center, and IKIPs. See Figure 3 for a depiction of the review process.

Figure 3

Current Process of Textbook Production



Private sector texts appear to be selected for use by officials at different levels. In some cases, head masters make the choice, in other situations, it may be officials at the Kabupaten or Kecamatan level. Given the size of the potential market for private sector texts, the potential for providing incentives to local officials to adopt particular books is high, and if uncontrolled could lead to the use of materials which are inferior to others that are available.

It is clear that the government does not have the funds nor the staff capacity to produce large volumes of curricular materials in a timely fashion. Senior level officials in Balitbang understand the need for a more speedy development process. If the present system is to be continued, they desperately need more staff who are well versed in the theories of materials development and learning. Given the well-established capacity of the private sector however, it may be that the role of the CDC would be more appropriately shifted to monitoring and evaluating the materials produced by the private sector to ensure that they are in compliance with the standards that would continue to be set by the CDC. A detailed study that identified the potential role of the private sector in assuming some or all of the production and development responsibilities of the government should be undertaken as soon as possible. An analysis should also be performed on the relative merits of providing sufficient numbers of texts to students in a smaller number of subjects. The report should address the value of depth of coverage (completeness) versus the merits of partial coverage as now prevails in the system.

E. Curriculum Implementation

The Directorate of Primary and Secondary education has responsibility for upgrading teachers in the use of the new curriculum and in preparing them to use "new" learning strategies such as those connected with the active learning approach. The Directorate also is charged with distributing textbooks and material to field sites. Monitoring and evaluating the performance of teachers and the effectiveness of the curriculum in the schools is also their charge.

Communication between the curriculum developers and the implementors is imperative if training and monitoring programs are to be successful. Although formal mechanisms exist for participation on Advisory and Approval Boards for representatives from both offices, it is not clear how effective the participatory element of the development and implementation process is.

The training needs of the Ministry to prepare teachers for full participation in the active learning curricular process is daunting. Current plans call for a two week training course followed by several short programs that will deal with active learning concepts and the CBSA curriculum. Given the weak substantive and pedagogical backgrounds of most teachers, it is doubtful whether even the ambitious training schedule proposed will be sufficient to really bring teachers to a level of self-confidence in their subject matter and in their personal teaching performance that will enable them to implement methods conducive to promoting active learning. A thorough discussion/analysis of material and training needs necessary to support a strong active learning component in schools is needed in the near future.

F. Summary

The curriculum employed in the primary schools in Indonesia has been taken in a new and important direction in the past few years; the movement towards greater student involvement and a focus on the process of learning as well as the content are significant, positive developments. A number of key problems face Indonesian education officials as the transition is made from 6 to 9 years of education.

1. Increase the number of textbooks available to students to ensure complete coverage;

2. Reduce the curriculum in scope and increase it in depth to ensure that basic skills are fully mastered in the early grades;

3. Integrate the curriculum vertically (grades 1-9) to ensure continuity and sequential progression of skill acquisition;

4. Integrate the curriculum horizontally (across subjects in each grade) so that what is learned in one subject reinforces that learned in another;

5. Develop teacher guides that will compensate in the short run for teacher deficiencies in both substantive and pedagogical areas;

6. Develop student texts that are more active learning oriented, that have numerous examples and skill development exercises that are graduated by level of difficulty;

7. Conduct studies on the potential role of the private sector in increasing the quantity, quality of textbooks and the efficiency of their delivery to students;

8. Develop a system for catering to individual differences among students in terms of ability and interests at the SLTP level;

9. Design a system for strengthening the integration of the various government bodies responsible for development, production distribution and implementation of curriculum;

10. Perhaps most importantly, reach clear consensus on the objective of expanding basic education from 6 to 9 years and on whether the key descriptor is universal or compulsory education through 9 years.

The main reform issues center on three fundamental curricular concepts:

o **Programs-** what constitutes the curriculum, how it is presented, and for what purpose it is being taught.

o **Production-** how many learning materials are produced (for students and teachers), in what subjects, and who produces them.

o **Process-** how the curriculum is implemented, with what degree of quality, and how quality can be improved.

An analysis of these issues follows in the next section and is followed by a set of options related to them in the final part of the report.

IV. Curriculum Analysis

A. Scope of the Curriculum

As noted earlier, the curriculum of the Primary and Junior Secondary Schools is characterized as a "separate subject" curriculum. There are approximately eleven subjects per class.

Primary curriculum contains Math, Moral Education, Religion, Bahasa Indonesia, Social Studies, Health and PE, Art, Pancasila, The Struggle for Independence, Science, Local Language, and Pre-Vocational Skills.

The Junior Secondary curriculum is broken into three divisions: general education, academic education and skill education. The general division contains Religion, Moral Education, Struggle for Independence, Health and PE, and Art. The academic division contains Bahasa Indonesia, English, Local Language, Social Studies, Math, Science (Biology and Physics). Vocational Education belongs to the third category.

Specific periods of instruction are prescribed for all subjects in the national curriculum guides. Length of instructional periods in classes 1 and 2 is for 30 minutes. Other instructional periods from class 3 upward are 40 minutes in duration. Classes meet six days per week for about 25 hours.

The nature of student schedules and the content of the curriculum prompt several observations:

1. There are too many separate subjects prescribed for primary classes.

2. The amount of "time" allocated for each separate subject is not necessarily conducive to attainment of quality instruction.

3. The goals of the national curriculum might be better

attained by a reorganization of the curriculum into some "broad field" designs, especially at the primary level.

4. The text of the curriculum at every class level is written in Bahasa Indonesian, which is not necessarily the local language spoken by all students.

Thoughts / Actions To Consider

1. The curriculum of the lower primary classes should have a major focus upon attainment of basic skills of literacy. Instructional periods should provide meaningful time allocations for presentation of skills, practice time to gain proficiency and reinforcement, and review. It is highly questionable whether the current division of curriculum into separate subjects with discrete time blocks adequately provides for quality instructional time.

2. With current time blocks, it is quite possible for a subject to receive little follow up within a week's teaching schedule.

3. Although it is possible for a teacher to sequence certain subjects within a week's time plan to achieve some possible integration and reinforcement of related subject matter, one might question the use of valuable teacher-time to achieve this task. It is also doubtful whether the current arrangements of topics within texts lend themselves adequately to this task.

4. Since it is recognized in the curriculum guides that teachers may have to "translate" Bahasa Indonesia into local language in certain areas of the country, one has reason to question the time constraints this places upon both teachers and students within a teaching period. Obviously those classes having fluency in Bahasa Indonesia will require less translation time than non-Bahasa Indonesia speakers, therefore enabling them to focus more time on task. Thus, possible inequities in instructional time may exist among certain segments of the student population in the country.

5. The uneven distribution of curriculum guides, textbooks, and teaching materials throughout the country may also pose a time constraint upon both teacher and student. When one lacks adequate instructional texts and materials, one may be forced to resort to a variety of classroom organizational procedures and instructional practices that might differ time-wise from place to place. This time constraint is compounded by the multiple subjects required within the curriculum.

6. The scope of the current curriculum at all class levels appears to focus primarily upon acquisition of content knowledge, with little attention to skills and process development. One might consider a greater focus upon mastery of literacy skills at lower primary class levels, with the greater application of these skills then used for acquisition of content knowledge at the upper primary levels.

7. Since education is so often viewed as the ideal agency to impart new ideas and knowledge to the citizens, curriculum workers are often asked and/or required to insert new topics into the curriculum. However, curriculum workers need to beware of "layering" on too many additional subjects in order to satisfy every demand. Thorough examinations of existing curriculum need to be made to see if new topics can replace outdated ones, or be woven into revisions of existing, related topics. Otherwise, a heavy, fragmented curriculum can easily evolve over time.

B. Sequence of Curriculum

1. Horizontal Organization

Observations and Possible Action

(1.a) Subjects like Math, Science, Bahasa Indonesia, and Social Studies appear to cover a vast number of topics within a given term. It is questionable whether sufficient coverage is given within the content to provide meaningfully for a sufficient depth level of understanding. Many topics contain some very abstract concepts. In order for students to comprehend these topics, it is important that enough facts are presented to evolve eventually into concepts. Without good concept development, it is difficult to move into the generalization level.

(1.b) For instance, a concept like "landlocked", is used to describe the geographical location of Nepal. Yet students' who understand the meaning of the words "land" and "locked", might not understand the political sense of this term. Having to maintain good political relationships with neighboring nations for an access to the sea might be a bit abstract for Indonesian students whose nation has such abundant outlets to the sea.

(2.a) There appear to be limited opportunities within a text for students to practice new skill acquisitions. Certainly this may be corrected by teacher-directed activities within a class. However, if one teaches

from the text, then little opportunity for skill mastery, and proficiency is built into the curriculum design of the text.

(2.b) For instance, in writing in Bahasa Indonesia, Class 1, Term A, children are introduced to half a dozen letters of the alphabet every few pages. They begin practice in the "i, n, b, d, p, k,and a." Within two pages they then learn the "t, u, r, m, and h." There is no consideration to the letter's shape, whether it's position in a word be one of initial, medial, or final position. (Example - kakak).

Without opportunities for students to gain meaningful comprehension of abstract concepts in the primary classes, especially, at lower grade levels, students may be forced to memorize information without a conceptual framework for application. There's a danger of creating a weak foundation in one's education when a curriculum paces itself too rapidly for content acquisition rather than understanding.

(3.a) In the upper class texts, especially Mathematics, topics at times are initially presented in rather abstract form, with little if any practical application. It almost appears as if curriculum writers in Math purposefully went "from abstract to concrete" rather than the other way around.

(3.b) One upper grade Math text begins a Unit of Instruction with sketches of a cube, a cylinder, a rectangle, and a square. Students are asked to use graph paper to reconstruct these shapes. Later in the text, the shapes are compared to common household items, such as a block, a tube of tooth paste, a box of tissue, and a tool box. It would have been better to start the unit with these examples.

(4.a) In Mathematics, topics in the texts of upper Primary and Junior Secondary often jump from one sub-topic to another within a chapter.

(4.b) For example, presentations of square root, geometric shapes, and graphing, appear within a few pages of one another in a text for no apparent reason. This disjointed nature of skill sequence within the scope of a year's curriculum is questionable when one considers the degree of difficulty presented by any one set of topics.

(5.a) The subject areas of Math and Science, at the upper Primary and Junior Secondary curriculum, contain many topics of questionable class-level appropriateness. It

might be wise to consider a re-evaluation of topical class-level placements of these subject areas, especially in relationship to the goals and objectives of basic education.

(5.b) For example, topics in Biology and Physics at the Junior Secondary level should be re-evaluated in their scope and sequence placement once a Class 1-9 compulsory curriculum requirement is enacted.

Summary

Within the total scope of the curriculum at any one class-level, there does not appear to be an attempt to examine topics for possible duplication or alignment within or between class levels to reinforce or enhance learning.

The curriculum, at times, emphasizes acquisition of knowledge with little, if any, focus upon objectives that enhance skill development inherent within the content.

2. Vertical Organization of the Curriculum

The term "expanding environment curriculum design" has been used by some curriculum people to describe the organization of the Social Studies curriculum. In this "design", one first studies the child's home and neighborhood, and through the years progresses to city, district, province, country, and world. However as one looks at the curriculum of not only Social Studies, but related areas such as Pancasila, Moral Education, and The Struggle for Independence, it is unclear how these subjects proceed content-wise from the immediate environment, and gradually expand and broaden to include the entire world.

The term "spiral curriculum design" has also been used by some people to describe the organization of parts of the curriculum in Science, Pancasila, Moral Education, and The Struggle for Independence. In this "design", a topic is often repeat from one class level to another. However, in each reintroduction of the topic increased depth and/or scope is given . For example, "rocks" might be studied in class 1, 3, 5, and 7. However, something new and interesting about "rocks" should be taught at each higher class level. Yet it is difficult to identify within the curriculum, how one topic is varied in scope and depth as it progresses spirally upward. Without clear delineations of scope and depth in "spiral" designs, there is great danger in needless repetition and overlap within and between subjects. Topics can become very boring. It is not fair to assume a teacher can define the varied levels of content in a spiral design on one's own, considering the extensive sequence of a 1-9 curriculum, and the level of teacher training.

Subject areas like Math, and the Language Arts, (Language, Reading, Writing), are heavily dependent upon a sequential skill development from class 1 through 9. For example, in Math, one proceeds from addition of two single digit numbers having a single digit sum (2 + 4 = 6) to the addition of two single digit numbers having a double-digit sum (6 + 5 = 11). It is critical that curriculum workers articulate that skill sequence before attempting the development of texts and supplementary teaching materials. That skill sequence can be an extremely valuable guide for teachers in their daily assessment of students' progress, as well as to those developing assessment examinations at provincial and national levels.

Subject areas like the Social Sciences and Science have a skill base as well as a content base to their curriculum. It does not always appear evident that the current curriculum pays adequate attention to the skill base in these subject areas. That skill base also has a hierarchy of skills which needs to be threaded into the content of the curriculum and used for daily and long range assessment needs. For example; critical thinking and problem solving skills to help solve social issues, interpreting globes and maps, understanding time and chronology, acquiring information, working in groups, evaluating information, communicating information, are categories of skills critical to conceptual understanding in the social sciences, and each contain a set of sequential sub-skills.

National goals and cultural traditions and values are of critical importance to the curriculum of any country. These goals and values need to be articulated in as concrete a form as possible, especially at the primary level, so basic attitudes and aspirations can be formed within the minds of the students. For example,"pride in one's nation" can be illustrated by a flag, a patriotic song, a President's photo display, etc. The formation of affective objectives, along with appropriate content for each class level, needs to be carefully developed in order to maximize the intent of the curriculum. Therefore, it would be good to clearly define scope and sequence of such subject areas as Pancasila, The Struggle for Independence, and Moral Education.

The extension of "basic-compulsory-universal"education from a six-year sequence to a 9-year sequence warrants some curricular review. For example, one should examines the present sequence of each subject area of the Primary curriculum to see if it "dovetails" into the same subject areas of the Junior Secondary curriculum? It is not uncommon in education systems to discover "gaps" when two units of a education system are joined together. Normally curriculum development and revision are done within a 1-6 and/or a 7-9 unit. The possibility of "gaps" occur unless one is extremely careful to insure a total 1-9 or 1-12 articulation of the curriculum.

The extension of "basic-compulsory-universal" education may affect the Junior Secondary curriculum in a variety of ways. For example, traditionally, classes 1-6 were "basic education". What will be "basic" about the current curriculum of the Junior Secondary level? Should it be different from its current preparation for a secondary school curriculum focus? To what extent will the increased student enrollment have upon the widening or narrowing range of individual differences on the curriculum nationally? If lower ability students tended to leave school after class 6, what effect will their presence have upon teachers, students of Junior Secondary? Should a "core" of basic education be created with elective opportunities? Will current curriculum adequately meet needs of "basic education" in the Junior Secondary schools?

The subject of English Language is introduced in the Junior Secondary curriculum. For those students, who for academic or financial reasons, do not intend to pursue the traditional education system after class 9, should they be required to take English? What degree of proficiency in "speaking-reading-writing" should be expected in this limited time? If the second language has merit, but insufficient instructional time, should it be introduced in the curriculum before class 7? Should it be used in relation to service jobs that require some English proficiency in either reading, writing, or speaking?

Once "basic" education is extended to a 1-9 curricular focus, it might be worth considering sub-groupings within the sequence of the total curriculum. For example; lower primary- 1, 2, 3, later primary -4, 5, 6, and Junior Secondary-7, 8, 9. One could establish major goals for each of these three sub-groupings. For example:

Lower primary focus:	Basic skills of literacy Awareness of Nationalism and Cultural Pride Readiness skills- Quality of Life
Later primary focus:	Using Literacy skills to acquire knowledge Developing Pride in one's country/ heritage Assisting in the improvement in the quality of life within one's locality
Junior secondary:	Using knowledge to acquire skills for life Assuming responsibilities of citizenship Contributing to a "quality" life

These sub-groupings and their goals, could then be used as a more specific framework upon which curriculum workers would then design their total curriculum. Each sub-group would have a focus which would lend itself logically to the next higher sub-group level. Since the physical and mental development of the child changes drastically during these nine years, it might be appropriate to

have a curriculum design which recognizes both educational as well as maturational principles.

C. Complexity of the Curriculum

1. Language

Second Language Issue - Observations and Suggested Actions

Indonesia is a country with a vast cultural diversity. Part of this diversity is evident in the variety of local languages used throughout the nation. Thus,in keeping with the national goal of "unity and diversity", both local language and Bahasa Indonesia are taught in the schools. Curriculum materials are often explained and translated by teachers in lower primary classes where Bahasa Indonesia is being learned as a second language. The medium of instruction, in reality for some schools, is the local language, until at some point in the child's education, Bahasa Indonesia reaches a fluency level at which time it takes over as medium of instruction, and a bi-lingual language learning program continues through the school years in primary and junior secondary schools.

Textbook materials produced nationally, however are written only in Bahasa Indonesia, and are written as if Bahasa Indonesia was the local language for all students. This is especially critical at the lower primary class-levels where children in many parts of the country are learning Bahasa Indonesia, as a second language, for the first time. This is not only critical in the materials produced for Bahasa Indonesia instruction, but even more critical in all other subjects using national textbooks at the lower primary level.

It is not evident,nationally whether curriculum objectives are established as guidelines for teachers in their local language instruction periods. Literacy in a local language should be equally responsive to reading and writing, as well as oral fluency.

It is not evident that teaching materials in local language have been produced to insure adequate quality instruction in that language.

Teaching methods for a second language situation, especially at the introductory level, often require specially prepared materials, as well as special instructional strategies. These appear to be lacking in the national curriculum guides and text materials produced.

Producing quality instruction guidelines and materials for both "unity and diversity" of languages is a major task. Linguistic studies of local languages, and their relationship to Bahasa Indonesia in oral and written form should be conducted. (or used, if already conducted) Results of these studies, coupled with

instructional strategies of second language teaching, could produce an excellent base for language curriculum development.

Language Control - Observations and Suggested Actions

There does not appear to be a "standard" for appropriate written language in the textbook design at any class level. If one examines the multiple texts of a single class level, one may find great diversity in vocabulary, sentence length, sentence structure, rate of vocabulary introduction, and frequency of word usage. For example, one class 1 text's first page contains 3 sentences,with 3 words per sentence. Another text's first page at same level has 7 sentences varying in length from 7 to 15 words. While creativity and diversity of language have merit, the effect of this can produce complexities that may have negative effects upon learning especially at the lower primary level.

Standards for language development are also critical when one considers the bilingual emphasis of the language curriculum classes 1 through 9.

Lower primary texts could benefit from some standardization in printing "type" and "style". In some class 1 texts only lower case letters are used in text. At the same level, but in a different subject, both lower case and upper case letters appear. No upper case letters are introduced however in the language texts of either Term A or B. Punctuation such as :,?,! appear in Math text, Class 1, while no punctuation appears in Bahasa Indonesia texts Term A or B. Two forms of the letter "a" can be found in different texts of same class level. Private sector texts illustrate a variety of other variations as well. Since lower class levels are responsible for teaching basic literacy, it seems reasonable that "language use" in all texts should enhance that goal, and not detract from its attainment.

Some thought needs to be given to "language control" in subject areas other than "language". Some language experts identify reading competency by levels; recreational level, instructional level, and frustration level. When written text is used in subjects like Social Studies, Math, Science, etc., some people recommend the written language level be appropriate to the "recreational level" of the student so the learner can focus on the complexity of the subject concept to be learned, and not be hindered concurrently with a reading level that is also taxing the mind of the learner.

Each subject area has vocabulary unique to its' own discipline. Each text should provide some consideration to vocabulary definition, and possible frequency of use, if it is considered critical to the learner's mastery of the discipline.

Some studies of vocabulary frequency, degree of difficulty, and

determination of readability level, have been done in the English language. Whether these studies have any transfer to Bahasa Indonesia I do not know. But some thought to their intent, might warrant some adaptation, creation, and/or replication to see if they could produce guidelines for language standards in textbooks. For example, The Fry Readability Formula measures the difficulty of printed material based on word and sentence length. Three written samples of 100 word length are used to determine the average number of syllables per 100 words, as well as the average number of sentences per 100 word length. These average figures are then placed on a graph produced by Dr. Fry to determine an estimate of class level difficulty.

Since textbooks at the government level are usually "committee creations", no doubt some informal sense of standardization of language must occur within that committee framework. However, that "standard" might vary from committee to committee. Guidelines for language standards could assist text writers in their tasks, as well as be used by curriculum developers in providing continuity and some uniformity within and between texts of same class levels, as well as between class levels.

2. Format

Considering the necessity for producing low cost instructional texts, in general, both public and private sector textbooks appear to make maximum use of their fiscal limitations.

Concerns for uniformity and consistency in type and print have been suggested in III.C.1.

The Art work in texts does not always enhance the objectives of the lesson. The Math texts especially have drawings that do not always highlight the concept being illustrated. Simple drawings to illustrate number concepts at times appear vague and abstract. Their artistic enhancement should lead the learner to success rather than add a distractor to the concept being mastered. Math texts seem to be in need of a critical review of both art work and layout to see how they can best be used to enhance, rather than distract from learning.

In general, there have been very few teacher guides, or teacher's editions for textbooks, whether public or private sector. However the current new Teacher Guides produced by the Curriculum Development Center for Math and Science-CBSA, represent a high quality format. These new materials will no doubt be highly prized by Teachers and should be considered as models for future teacher guides in other subject areas, where CBSA or not.

It appears as if the national curriculum guides were expected to be used by teachers as teacher guides. It is important to denote the

difference in intent between the two guides. One should communicate the nation's goals and objectives among designated subject areas, and prescribe the minimal essentials expected in topical outlines which would be used to achieve the goals and objectives stated. A teacher's guide then deals with more specific day-to-day operational tasks expected of the teacher, giving examples and suggestions of how a teacher might proceed with a specific set of instructional tasks. The degree of specificity of these guides is usually determined by the expected competencies of teachers produced by the IKIPs.

It would take a great deal of professional sophistication to use the current national curriculum guides effectively as a teacher guide. One should not expect teachers of primary and junior secondary classes to be able to do this well. The efforts currently being taken by the Curriculum Development Center in their production of CBSA teacher guides represents an excellent model for future production of teacher guides.

Producing good teacher guides will only impact upon teacher behavior in the classroom to the degree that teachers have access to the guides and some direction in their use.

3. Substantive Content

Specific references to these issues were discussed during the analysis of "scope and sequence" of the curriculum, particularly IV,1 and 2.

D. Distribution

1. Fiscal

The budget has not enabled the Curriculum Development Center to produce enough curriculum guides for each teacher. It is estimated that about two copies per school for 5 teachers are distributed annually. If the intent of the CDC is to have teachers use these as teaching guides, then someone has to insure a one guide-one teacher ratio of distribution.

If the production of textbooks within the CDC is considered the best quality approach to communicating the nation's curricular objectives, then a goal of one text-per student needs to be provided for within the budget.

Strategies for dealing with financial constraints need to be considered while one is concurrently lobbying for greater fiscal resources. For example, maybe one year a one pupil-one text could be financed in one subject. A different text might then be produced free the following year, etc. Subsidies for low income families should also be considered.

Possibly some media attention to the needs of low income-talented students might arouse some social consciousness among certain civic groups that might support subsidies, in part.

2. Geographical

Textbooks have to produced in sufficient time to meet time constraints of "geography" and the start of each academic term.

Consideration should be given to regional textbook publication sites, which might ease both problems of length of time, and cost of distribution.

3. Governance

Since primary schools are serviced by both MOEC and the MOHA, one might explore the most efficient mechanism within one or both of these Ministries to minimize problems of textbook distribution.

E. Role Of Public and Private Sector-Textbook Production

The private sector already has produced a number of competitive supplementary texts and practice exercise books for use in primary and junior secondary classes. These books appear to be of a physical quality and of a price range similar to public sector text materials.

The private sector has been able to produce a wide variety of materials in a short span of time compared to the public sector. Although the public sector has made great improvements in their time line capacity for producing texts, it still is a multi-year effort compared to faster times demonstrated in the private sector.

The question of quality between private sector and public sector texts has not yet been fully addressed. The public sector has established criteria for "official text" endorsements, as well as "supplementary" category approvals.

Guidelines or standards need to be established by the CDC, regardless of where one stands on the public-private sector issue in publishing educational material, since the private sector has already created a substantial marketplace for itself in the industry.

The CDC and /or other MOEC policy makers need to consider to what extent they wish to approve and then monitor private sector publishing if they are asked to adhere to standards.

The utilization of private sector vendors should be considered by the MOEC in its long range plan for effective and efficient textbook production and distribution.Pro's and con's need to be considered. A possible joint conference or day's seminar on the

topic might produce promising avenues of cooperation. How to best use one's manpower, and fiscal resources, for quality textbook production is a thought worth considering.

The use of the private sector, in coordination,and/or collaboration with public sector will have implications for the role of the CDC and Balai Pustaka. For example, CDC might devote more time and human resources to developing quality control guidelines for all aspects of the national curriculum. These would need to be approved and monitored to maximize there effectiveness. Balai Pustaka might devote its human resources to textbook production in affective areas of the curriculum focused on local and cultural and religious and nationalistic themes. Problems of textbook distribution would be shifted to the private sector, and possibly more in line with their existing capabilities.

F. ALPS Emphasis

A major effort is being planned to implement the Active Learning and Professional Support project in every province of the country. Having begun the effort in 1989-1990,it will take until 1995-1996 to complete the implementation design. (See Chart A.) the design requires three stages for completion within a replication area. The first stage is called Training and Implementation. The second stage is Enhancement, and the final stage is called Stabilization. Each stage covers an academic year.

It has been stated that funding for implementation of the ALPS project will be made by the MOEC and The World Bank for efforts made in Repelita 5. This would insure the financing of the implementation design for the first five of the seven-year effort. Since the remaining two years required for full implementation are in the beginning of Repelita 6, it is important that funding needs be communicated to budget planners of Repelita 6.

The Curriculum Development Center has recently produced excellent Teacher Guides for ALPS in Math and Science primary classes. Other targeted subject areas receiving ALPS emphasis should receive high priority in their publication schedule to insure their use in this massive implementation effort. The timing of this publication effort to coincide with in-service sessions is critical to maximize support efforts for teachers in training.

There is great learning potential inherent in the ALPS teaching strategy. Unleashing students' potential to explore solutions to problems, designing tasks to meet both individual and group interests and abilities, as well as utilizing the local environment as a source of information, are all excellent starting points for learning. Much can be initially learned from observation and the sharing of information gathered by individuals and groups. However, this should be seen as only "the tip of the iceberg" in relation to

what could be learned. As ALPS is designed, it sets a stage - a starting place for learning.

Figure 4

Chart A: ALPS Implementation Design Plan

Number of Provinces	80-90	90-91	91-92	92-93	93-94	94-95	95-96
6	Stage #1	Stage #2	Stage #3				
6+4		Stage #1	Stage #2	Stage #3			
6+4+3			Stage #1	Stage #2	Stage #3		
6+4+3+7				Stage #1	Stage #2	Stage #3	
6+4+3+7+7					Stage #1	Stage #2	Stage #3
Repelita 5						Repelita 6	

Chart B: Suggested Student Resources Materials Implementation Plan

Number of Provinces	91-92	92-93	93-94	94-95	95-96
6	Student Resources				
4		Student Resources			
3			Student Resources		
7				Student Resources	
7					Student Resources
Repelita 5				Repelita 6	

ALPS strategy capitalizes upon the idea that once children are highly motivated, they will want to learn more. This opportunity to expand a child's mind and thought processes to higher levels of learning should be a major goal of ALPS.

In order to support teachers' efforts to capitalize upon this motivational level, students will need access to a wide variety of textbooks, supplementary books, and a variety of reference

materials. Without having access to new sources of information to expand one's ideas and consider alternative points of view, a student becomes limited in educational potential to whatever resources are currently available in the school today. Where there is a limited number of basic textbooks, and limited supplemental resources, a student is forced use one's teacher as the major source of knowledge. A greater variety of resources are needed. This is not the best educational resource needed to maximize the potential of the ALPS learning strategy.

To help ALPS reach its maximum potential, the MOEC might consider a Student Resource Materials Project. Such a project might dovetail nicely into the design of the ALPS implementation schedule by establishing good resource material centers during or following the "stabilization" phase. (See Chart B in Figure 4.)

1. Professional Follow-up Support

The implementation, enhancement, and stabilization of ALPS in a province should dramatically raise the quality of teacher-behaviors in the classroom. Like their students, teachers will grow from their motivation and in-service training, evolving into better teachers. As this occurs, the demands required of using the ALPS strategy, will probably also awaken in teachers their need for better training. ALPS may very well create in teachers a "starting point" for greater professional training. Will the MOEC be able to capitalize upon this inherent readiness for greater professional growth among teachers? The quest for higher levels of learning seem logical outcomes of ALPS, in both students and teachers. If this occurs, it may well benefit educational planners to consider some short and long range questions. For example:

1. Will ALPS be practical as a strategy in all topics of targeted subject areas?

2. Will it be possible, nationally, to monitor the progress of ALPS, and on the basis of such monitoring, refine and revise current ALPS teaching materials and guides?

3. Will teachers in non-traditional schools (multi-class teachers) be assisted to find alternative teaching strategies more suited to their situation as part of the in-service effort created by the ALPS implementation design?

4. Are their cultural groups that might find conflicts in the ideas and practices of ALPS? If so, what alternatives might be provided for these areas?

5. Will the Headmaster and Supervisor receive additional training and support in professional topics so they can maximize their ability to lend professional support to

their teachers?

6. Will Headmasters and Supervisors be provided the professional time to support teacher improvement in the classroom?

7. Is it possible for a Headmaster and a Supervisor to continue their "inspection duties" within a school and still play the role of "supporter" to the teachers?

8. What plans exist for professional activities within a province once it completes "stabilization" of ALPS?

9. Since there will be a three-year gap between the completion of ALPS implementation and final national coverage,will there be sufficient human resources to continue increased professional support in those early implementation provinces, if desired?

10. What incentives, short range and long range, will there be for teachers to continue their own professional in-servicing during the three years of an implementation cycle?

11. Once professional expectations of teacher behaviors have been raised throughout the nation as a result of this national in-servicing, will the IKIPs' curriculum and pre-service experiences reflect these national expectations?

12. To what extent can the curriculum development center, the teacher training colleges, and the examination center, coordinate their efforts so the same level of professional expectations will be reflected in newly graduated teachers, newly produced textbooks, and national examinations?

In summary, the national implementation design for ALPS has the potential of creating a need for better teaching guides and aids, abundant learning resource books for students, and a greater desire to improve one's competencies as a teacher. ALPS may very well be the force to light the lamp of knowledge. The concern is whether the MOEC will be able to provide the "fuel" to keep the lamp burning.

2. An ALPS Example

Suppose children in an upper primary class had been involved in a re-greening project as part of their scouting activities. A teacher might capitalize upon this interest and introduce the theme "forest conservation" for an ALPS related class activity.

Initially a teacher and students might brainstorm, or web out ideas

related to the theme, forest conservation. Maybe they would design a series of tasks for individuals and groups to discover how they make use of wood in their local area.

In time, children probably would have discussed their group tasks among themselves, read their section in the science and social studies book, and explored their local area for more information about local use of wood.

Once these tasks have been completed, the students would share their information with the class. They may have discovered:

1. most people have something made of wood in their homes,

2. some people make their living by making things like tables from wood,

3. the shops and markets sell many things made from wood,

4. some people burn wood for cooking,

5. One of the government's Ministries is responsible for our forests, etc.

Having also collected and read articles from the local newspaper about forest conservation, the students are now ready to generate queries on a higher level about the topic. For example:

1. What does the Forest Ministry do to conserve forests?

2. Why is it necessary for the government to conserve the forests?

3. How big are the forest resources of Indonesia?

4. In what ways are the forest resources used by the people of Indonesia?

5. What kinds of products can be made from the various types of trees grown in Indonesia?

6. What kinds of jobs are created by the various forest-related industries in Indonesia?

7. What kinds of educational background, skills, and training might a person need to have to have a career in forestry? etc.

At this point, the teacher needs to help the students acquire a more valid base of knowledge than that generated by local survey and discussion. Greater scope and depth of information and thought is required. Students will need access to a wide variety of up to

date supplementary books, reference resources, encyclopedias, magazines, and related media. Students will also have to be helped to learn how to use these educational resources in a skillful, and efficient way. All of this sequence establishes a higher level of readiness to apply problem-solving and critical thinking skills to social issues. Without an opportunity to have greater "input of knowledge", and the acquisition of life-long learning skills, a student remains dependent upon the teacher and those meager resources currently available in far too many schools of the country. If the implementation of ALPS does not include quality student and teacher resources, teaching styles may gradually revert back to a lower level of teacher behavior. Teachers may be inadvertently forced to become the "giver of all knowledge", and the rote lecture method could rapidly return to the classroom.

G. Special Education

Although the main focus of this report is on regular school programs of classes 1 through 9, some thought and concern has been raised about the field of Special Education. The MOEC has been involved with major issues of this field through involvement in the Sub-Project on Special Education of EOCENE Development Educational Project. Their efforts have concentrated on:

1. development of guidelines for identification of children with special needs,

2. curriculum development for children with special needs,

3. identification of teaching materials and teaching models for children with special needs

4. teacher education issues for Special Education,

5. support for the gifted and talented.

Since a major strength inherent in the ALPS strategy is providing for individual needs, one might encourage the ALPS in-service trainers to highlight at least 3 groups of children with special needs that might easily be accommodated in the regular classroom. They are (1) the partially sighted, (2) the hard of hearing, (3) and the gifted/talented.

During an in-service session teachers might be informed of the following:

1. Make teachers aware of these 3 groups of exceptionality, and help teachers consider behaviors which might be early indicators of giftedness,and visual and auditory impairment.

2. Teachers should be shown the "simple screening devices"

used for identifying children with special needs, as well as the observation guidelines suggested for their use.

3. Teachers should be helped to identify those health and/or social agencies which might provide corrective treatment for these physical impairments, and be able to counsel parents to take advantage of such services to halt the increase of any impairment.

4. Modules of instruction which have been prepared for the gifted and talented should be made a part of every teachers classroom resource file.

V. Key Policy and Implementation Implications

A. Planning a Curriculum for Grades One to Nine

There appears to have been little planning for the increase in the number of students that can be anticipated when Junior Secondary schooling becomes compulsory or is offered more freely. There also appears to be little or no planning about integrating the primary and the junior secondary curriculum more tightly. Furthermore, until now Junior Secondary schooling has been preparation for Senior Secondary school. It can be anticipated that a larger proportion of students will leave Junior Secondary in the future without proceeding to Senior Secondary than do so currently. This raises the question of nature of the Junior Secondary curriculum.

Various options should be considered regarding this set of issues:

1. Since some, perhaps the majority of students will go on to Senior Secondary, it will be necessary to continue a preparatory curriculum for them. Should Junior Secondary be tracked with academic, commercial and vocational paths? If there are tracks would it be feasible and desirable to attach the academic track to the Senior Secondary schools, thus leaving the current junior schools to the increased enrollments in commercial and vocational tracks?

2. It should also be possible to include course work which prepares school leavers for life skills such as practical business math, practical sciences and possibly training in such basic vocational skills as measurement, tool use, basic organization and management, use of credit for microbusiness, and fundamentals of modern agricultural practices such as small animal husbandry.

3. Another possibility is to use Junior Secondary school for an interim period as a remediation program to permit those students who are not academically qualified to make up for inadequate primary schooling in the basic

subjects.

4. A task force should be set in motion to consider the implications of substantially increased enrollments. At a minimum the following questions should be examined:

   - o The integration of cross grade and cross subject reinforcement for grades 1 to 9, whether there is tracking or not. Should the curriculum be conceived of in three phases: a) basic skills in 1 to 3, b) basic knowledge and attitudes in 4 to 6, c) basic life skills and preliminary vocational foundations in 7 to 9?

   - o Should class sizes be enlarged?

   - o Should additional classrooms be added to existing schools? Should new schools be constructed? What guidelines should be used to determine where one or the other should be undertaken?. Should provinces or regions that are now underserved be given priority? Should population pressure be the key determining factor?

   - o Would double shifting be feasible so that the same school facilities can be used? Would teachers be available and at what cost? If not or if it is too costly, could the schools be used in the afternoons or evenings as collection points for group self- instruction?

   - o Would it be feasible to use an alternate day schedule as was done in Norway? Would intensive all day weekend programs be feasible, perhaps supplemented by self-instruction?

   - o Should an Open Schooling program be instituted as an interim step? (education that does not require attendance at school, but can be conducted by methods such as correspondence, radio and TV) Which subjects can be covered adequately by this means? Should it be a distance program, or a Patjar type of program? In the Patjar program students pick up self-instructional modules at a local school, study them for a week, and return to the school to be tested and to pick up another set of modules. They hold discussions with other students and a teacher, Should some residential schooling be provided if it is a distance program?

   - o If an Open Schooling program is adopted who will prepare the materials and training of its functionaries? What arrangements are necessary for registration, provision of materials, tutorials, testing, etc.?

B. Crowded Primary Curriculum

The primary curriculum is very crowded. Thirteen subjects are taught each week. Furthermore the 2.5 hour primary school day for first and second grade and the 4.75 hour day for the other pupils is much shorter than in the developed countries and the effective number of school days is fewer. Thus, it is questionable whether the average primary school student has enough time to establish a firm foundation in reading and writing. Whether the low scores in math are the result of the crowded curriculum or an ineffective teaching approach is debatable. These subjects require a great deal of drill and practice to develop strongly habituated skills. Once established they facilitate learning of other subjects. If not well habituated they inhibit other learning.

The problem is aggravated for a considerable proportion of students who need to learn Bahasa Indonesian as well as their basic language skills since they are taught to read in a second language.

Five basic options are available to remedy this problem:

1. In first, second and third grade more time could be gained for reading and math by consolidating several subjects under social studies.

2. The school day could be expanded.

3. The methods used to teach reading and math could be improved. This could be done by

   - o reducing ambiguities in initial and remedial expositions,
   - o more frequently diagnosing learning achievement,
   - o remedying as soon as deficiencies are detected,
   - o sequencing the progression of learning optimally,
   - o providing substantially more practice and review than can be done in the time that is now devoted to language and mathematics.

   Learning inhibitions would be reduced. Failure to learn and wrong learning would be prevented from interfering with subsequent learning. Moreover, the gains from thoroughly learned basic skills would be multiplied many fold. It will lead to much greater learning subsequently. Conversely, subsequent learning will strengthen the habits learned earlier.

4. Teaching basic skills could be made more efficient by

using well designed programmed instruction which incorporates the methods mentioned in 3 above.

5. A combination of the four options above.

C. Lack of Integration within the Curriculum

The curriculum lacks integration among subjects. Although it is reported that the scope and sequence of learning objectives within subjects across grades was tabled and ordered to insure that learning among topics at different grades is reinforced, the scope and sequence across subjects was not ordered. (When the scope and sequence are tabled, all learning objectives are set out in a table. They are placed in an order that optimizes learning. Learning that is prerequisite to other learning is placed earlier. Learning that can strengthen an earlier habit is placed later and is formulated so that it does strengthen the earlier habit.)

A cursory examination of the mathematics curriculum leads us to suspect that math may not have been properly ordered. At least some of the sequence of topics appears to be arbitrary and counterproductive.

Two options are available to remedy this situation:

1. A task force of curriculum developers could table the whole scope and sequence of basic education objectives from first through ninth grades. They would resequence the objectives for optimal learning efficiency. It is very likely that some or much of the sequence will remain as it is, so that the task will not be as formidable as if it were being done ab initio. The plans of textbooks in process of development would probably be improved substantially by the changes. If radical changes are needed it would be best to determine that before the incorporation of grades six, seven and eight.

2. The task force could review the scopes and sequences that were prepared for PAMONG in Indonesia and for INSPIRE in Malaysia, both of which incorporated cross- subject as well as cross- grade reinforcement. Such segments as fit current Indonesian requirements could be incorporated or adapted. This would probably save considerable time. In any case, however, it will be necessary to make a fresh table for the upper three grades in relation to the lower six.

The following two issues will be treated together since the same basic considerations underlie both of them.

D. Lack of Efficiency of Materials and Methods

Although the basic course outline and the curriculum guides appear to be highly detailed, the instructional approach, that is the way teachers use materials and convey information to students, does not appear to be efficient. Efficiency is equivalent to optimal instruction. The term 'optimal' is used because what may be maximum efficiency for one student may not be for another, so the teacher must exercise judgments constantly in the course of instruction. The teachers' guides need to be more specific.

The approach now in use fails to provide the teacher either with the specific instructional subject matter or with the optimal sequence of instructional information from the point of view of learning efficiency. The teachers are reported to follow the curriculum guides too slavishly. They seem to be reluctant or unable to vary the sequence or the methods, materials or equipment beyond those mentioned in the guides.

E. The Active Learning Program

The Active Learning Program which is designed, at least in part, to remedy this problem provides the teachers only with sample expositions of materials and methods. Moreover, the active strategy calls for the students to seek out information, but the schools and classrooms are not furnished with reference materials, readings or teaching aids that would enable to get the information they are induced to seek. The program calls upon the teachers to create and invent techniques and expositions. It is said that most teachers do not know their subject matter well enough to do so.

It is expected that all teachers will meet each Saturday in cluster support groups to learn methods, techniques and subject treatments from each other. A select number of teachers between the ages of 35 and 45 will be allowed to take the Open University upgrading courses for credit. While it can be expected that those who have the incentive to get credit will attend tutorial sessions more or less diligently, it is unlikely that most teachers who have no such incentives will stay with the weekly meetings. It is reported that most teachers attend about half the sessions.

We can hypothesize five reasons for teachers' failure to be more open and creative in their instructional approaches. 1) Most teachers may not be able to invent or create instruction regardless of their training. 2) If they could do so, they may not have learned how to in the course of their education and training. 3) If they could do so, they may not have learned their subjects or pedagogy well enough to permit them to do so. 4) If most teachers cannot create and invent efficient instruction, it is unlikely that they have learned the particular formulations and sequences of stimuli that would constitute an optimal repertory. Such a repertory would need to be prepared by specialists in instructional design. The curriculum guides and teachers guides do not contain this repertory of instructional variations from which teachers could choose appropriately. 5) Most teachers may have forgotten

much of what they learned.

The options ensue from the foregoing hypotheses:

1. If the first hypothesis is correct, then most teachers must be taught the specific variations in instruction, the specific formulations and sequences of instructional exposition, and rules or principles for applying them appropriately. Furthermore, they must be taught well enough to absorb and retain them and to apply them appropriately in the complexities of the classroom environment.

   This training would consist not of subject matter alone or of pedagogical methods alone, but of the specific combinations of the two, and of the principles for applying them to the students as appropriate. Training would include basic sequences and branching patterns which would be selected at the discretion of the teachers in accordance with applicable principles, depending on the students' learning achievements.

   Training could be given pre-service or in-service, but in either case would need to include practice under supervision.

   An alternative would be to supply the instructional contents in the form of materials which teachers could use as guides until they mastered them in the course of classroom experience.

2. From what we know of teacher training in Indonesia, it is highly unlikely that they were taught to create and invent instruction effectively. In any case it may not be possible to do so for the majority of teachers. An attempt was made to instruct teachers with the type of specificity discussed above. Therefore it is unlikely that improvements in the training approach to which they were exposed will lead to the desired behavior.

3. The third hypothesis presupposes that a teacher who is well versed in subject matter and in didactic methods will be able to combine the two appropriately and apply the combination appropriately in the various specific learning situations that occur in classrooms. Indonesian teacher training currently assumes this presupposition.

   Since the above mentioned presupposition underlies all forms of teacher training being done or planned for Indonesia, it would be worthwhile to study very carefully whether it has been borne out historically. If that is not

feasible, it is important to research it prospectively, that is, whether it will be borne out in planned teacher training.

Furthermore, since Indonesia will depend heavily on the efficacy of teacher training for educational improvement, research on teacher training should be aimed pointedly at determining whether this assumption is valid, and valid for the majority of teachers. A criterion of well measured achievement scores should be used as the main dependant variable. Process results like more active learning can also be used as secondary measures, but should not be substituted for achievements.

4. The fourth hypothesis presupposes that the instructional behavior embodied therein constitutes effective instruction. Whether that is true can be tested. It would be necessary to design and develop the instruction, and then to design and implement the teacher training to test whether that is true.

The Active Learning Strategy represents such a program in rudimentary form. It would need to elaborated and detailed far more thoroughly than it appears to be to us in its current form. Moreover, the teacher training methodology would need to be more systematic, and more pointed at effectively utilizing the materials than is now contemplated. The training for such a program would require about a month of concentrated learning and practice as well as two or three, compulsory short periodic refreshers after teachers have gained classroom experience with the program.

A program of the kind discussed above would require more instructional materials than now appear to be planned for the Active Learning Program. If additional materials were designed in the form of references and workbooks in place of conventional textbooks they are likely to be more affordable than conventional textbooks.

Since the instructional strategy embodied in this approach may be the most effective and the most cost-effective one, and since so much will depend on the effective combination of instructional materials and teacher training, it would be worthwhile to test this approach effectively. Indonesia is at an historic juncture at the beginnings of a worldwide information revolution that will require massive learning for production, organization and distribution in the world markets. If the learning gap between Indonesia and the other East Asian nations, North America and Europe is not closed soon it may become unbridgeable. Investment in a proper test of this approach would be trivial compared to

the potential historic payoff.

5. It is probably true that most teachers have forgotten much of what they have learned. That is true of most learning by most people. It is the reason why the Bible, the Koran and textbooks and supplemental readers and teaching aids are so important in the learning process. Most teachers need to refresh their own learning, not only with basic textbooks but also with reference materials that enables them to answer questions confidently and to introduce creative variations in instructional materials and techniques.

6. If the planned cycle of training for the Active Learning Program is pursued, the Open University upgrading courses could be made available to all teachers who need improvement. The weekly support sessions contemplated for the Active Learning Program could serve as the tutorials for one or more Open University courses. Credit might be awarded only to those teachers who choose to pay for it if not to all who attend.

Conceivably some credit could be awarded to all who attend and complete the tutorial work satisfactorily. But additional credit would be awarded only to those who complete the work with distinction, or who complete additional course work satisfactorily. Although this scheme may not solve the attendance problem entirely, it may alleviate it.

F. Government Texts not Synchronous with the 1984 Curriculum

For some subjects parts of the sequence of topics in the 1984 curriculum is out of step with the sequence of topics in the government textbooks. Apparently some of the privately produced textbooks do have the same sequence of topics as the 1984 curriculum guides, but the presentation of some of the materials appears to be flawed. Teachers appear to be attracted to the privately produced material because it enables them to follow the curriculum without needing to make adaptations.

The following options may help to remedy this situation:

1. The production of textbooks can be speeded. In other nations textbooks have been produced within one year's time rather than the two to four years that have been cited to us. A different production system would be necessary. Several persons would be assigned to write each textbook. This would necessitate development of a detailed master plan for each book, showing the sequence of topics and subtopics, illustrations, reviews, exercises and test questions.

Textbook writers would need to be trained in textbook design as well as to use language appropriate to the maturity level of the students. It would also be necessary to provide them with guides for these purposes.

It would be important to change from hourly pay to payment on a straight salary basis, or payment for the completion of a batch of materials. Incentive bonuses could be awarded for early completion of high quality material.

2. Government textbooks for core subjects could be made available for private producers to use freely or for stipulated royalties or fees. This would enable the private developers to produce higher quality materials on a fast schedule.

3. The government could contract with private firms to produce textbooks and other materials to government produced specification and schedules. If necessary the government could sponsor training for textbook developers to insure high standards of design and development. The government could contract with universities or private firms to design, develop and implement such training.

4. The government could set standards for approval and permit market forces to motivate private developers to produce for the market as in the U.S. and other nations. Government involvement could be switched from development to setting standards and enforcing them. The market may not be mature enough in Indonesia to guarantee that high quality textbooks will become available by this means.

G. Low Government Textbook Production Levels

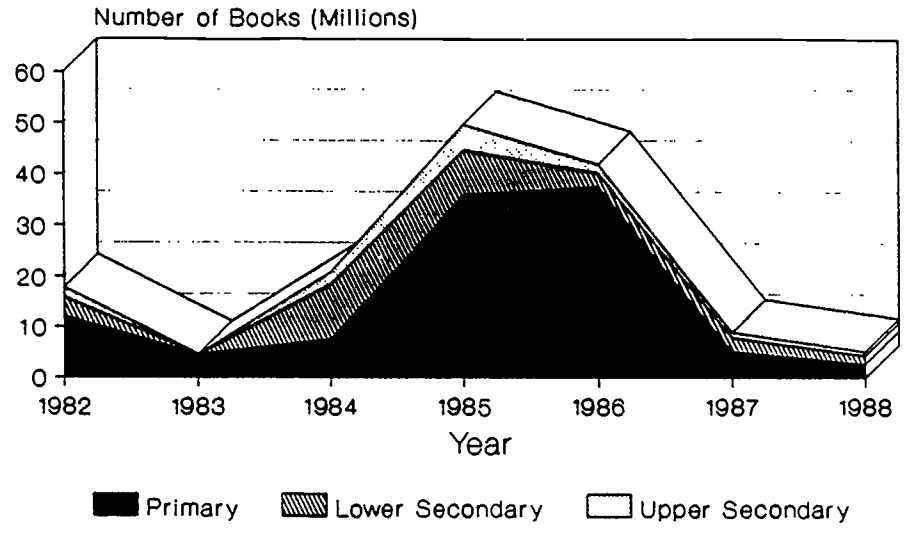
It is reported that the government can afford to produce and distribute enough textbooks only for about 20% of the students. Moreover, it appears that a significant proportion of these materials for some reason do not reach the schools for free distribution.

The options under F above are pertinent here as well. Several other options may help to remedy these specific problems:

1. The government might be able to furnish all students with four basic texts, language, math, social and moral studies, science if it did not attempt to supply texts for eleven subjects. An even more affordable system would be a set of reference materials and workbooks in these basic subjects.

2. The government might charge more than the production cost of each textbook, and use the profit to subsidize

Government Textbook Production
By School Level 1982-1989



Source: Pusat Perbukuan

This figure is to replace the figure on page 19.

students who cannot afford to pay or to pay full purchase price. The price could be set at what the market will bear. This might enable it to distribute a greater number of books.

3. The books could be distributed by the postal system to each Kabupaten. If one person only were designated to be responsible to receive and distribute them it is more probable that they would be delivered to the schools than if accountability is distributed. Bulk mailing rates could probably be worked out to make it feasible to distribute this way.

4. If a greater number of legitimate, high quality textbooks (either government produced or privately produced) were made available to the system, it would matter very little or not at all to the efficiency of learning that some teachers adopt books on the basis of favors. If teachers continued to adopt unapproved, inferior books over available approved books, they should be reprimanded, at least. If it could be demonstrated that they did so because of bribes, they could be subject to prosecution.

H. Lack of Continuous Assessment

There is a continuous assessment system in use. Teachers prepare unit tests for formative purposes themselves. Committees of teachers prepare test items for the mid-quarter tests. Teachers are given the responsibility of developing test items on the theory that they know what they have taught and therefore will test only what has been taught. The flaw in this is that teachers may fail to teach required objectives. Some teachers fail to test formatively. Teachers who do test formatively record average scores, but report that they do not have time to remedy mistakes that have been found because of the pressure they feel to reach curriculum targets.

The quality of the test items is likely to be less than good since the writing and validation of precise, unambiguous items is a highly skilled intellectual task that is best done by specialists.

A number of options are available to deal with this situation:

1. If the curriculum contained only a set of objectives that is achievable by the average student, together with enrichment materials for faster learners, it would also be possible to develop and supply to teachers a pool of calibrated items for each unit of instruction which teachers could use for frequent, valid and reliable diagnoses. Whether the professional test resources exist at the provincial level currently is questionable. The ministry is installing 27 computers at the Kanwils in a

network that should make it feasible to produce localized as well as nationally standardized test items. They should be developed in consonance with decentralization, devolution, and curriculum localization efforts.

2. All teachers guides could contain actual or sample test items and appropriate self-instruction on how to write item specifications and items. This would leave the burden of testing on the teachers, but might improve the quality of the tests. It would not be as valid a testing program as with the use of professionally prepared items. But it might permit earlier development of items for localized materials and conceivably may be more cost effective.

3. Teachers could be given training to construct better tests than if left to their own devices. They could be taught to develop item specifications for criterion referenced tests in order to sharpen their item writing. We understand that such a training program is just getting underway. This also would not be as effective as having items produced by highly competent professionals but might be more cost-effective.

4. It would probably be useful to carry out a cost-effectiveness study of the foregoing three options. The study should include an empirical test of the utilization of the items under each option as well as an analysis of the effectiveness, time and costs of item writing, and of delays in putting good items into use.

5. In modern instructional development practice criterion referenced test items are developed first by specialists in order to insure that the objective being served is expressed in behaviorally possible terms. Then instruction is designed to make certain that the student learns the processes and contents necessary to score correctly on the test items. This implies both a mastery learning approach and comprehensive materials development. Cost-effectiveness is attained by the optimal integration of the subject matter, optimal formulation of the instructional materials and methods, low-cost materials production and distribution and precise teacher training in the use of such materials.

I. National Assessment Tests

The national tests assess subject matter achievement, not process learning. It is feared that teachers will abandon or suspend use of the Active Learning Strategy in order to teach to the tests. Furthermore, it is reported that teachers who provide private

tutoring are mainly teaching to the tests.

There may be three problems here requiring three different options:

1. If the Active Learning System is failing to help the students to learn the knowledge and skill required by the curriculum, it should do so. If students were to test well on process but not on content achievement it would be an inadequate program and would have to be modified until students could pass the tests on the basis of real learning rather than specious test training. In any event it needs to be determined validly whether students do achieve content learning or are merely becoming accomplished test takers.

2. If the national tests are testing for objectives that are not in the curriculum, they should be changed to test only for approved objectives. First, of course a firm set of national curriculum objectives needs to be agreed upon.

3. If the national tests are testing only for a limited set of curriculum objectives, i.e., content, but not process that is also deemed important, they could add process items, although these are very difficult to produce with validity and reliability. It would be possible to produce a valid pool of items that measures process achievement through measures of content achievement. It would be very difficult to teach to such test items without teaching the processes as well as the item content.

J. Localization of Curriculum

As much as 20% of the curriculum will be regionalized or localized. If this is done principally by adding subjects such as local history, geography, ethnography without reducing time devoted to national subjects, it will further crowd the curriculum and make it more difficult to provide a foundation in literacy and numeracy especially where teachers are weakly prepared or in scarce supply. If it prevents an increase in time devoted to reading and math in the earliest grades it will be a retrogressive step.

The following options should be considered in implementing the regional or local programs:

1. Regionalization or localization could be done in part by localizing examples and illustrations of core subjects, and in part by substituting local history, geography, etc. for some of the national curriculum in these

subjects. Localizing examples and illustrations could make learning easier and more efficient.

2. Care should be taken to insure that localization does not prevent expanded time in the curriculum for reading and math. If this is done the localization promises to make learning more efficient as well as relevant.

3. Localization or regionalization will require that suitable learning materials be produced, preferably at a high standard of quality. Local materials will almost necessarily be produced locally. A training program in modern instructional design should be offered to people who will be developing local materials.

4. Training should also be offered in curriculum development because local materials and national materials should be integrated so that learning is enhanced in both types of subject matter. This will almost certainly require that a task force or a series of task forces be formed consisting of national curriculum development specialists and local developers. The purpose would be to develop principles and guidelines for tabling scopes and sequences of materials. They would also carry out the actual integration of the local and national content.

   The work of integration is likely to require some modification of national core materials as well as development of local ones.

5. The development of local or regional curricula and materials will provide an opportunity to develop local capacity to carry out these functions. As has been suggested above sound training in these functions should be offered to local persons in order to develop the needed expertise.

6. Consideration should be given to contracting private firms to carry out localization of instructional materials. If this option is chosen, the private sector should be offered training. Fees could be charged to cover the costs of training.

K. Need for Individualization

Individual differences among learners should be catered to in a well designed curriculum. Two basic approaches are possible. 1) Students can be assigned to homogeneous tracks. 2) Schools and classes are kept heterogeneous, but slow and fast learners are given remediation or enrichment in addition to core instruction.

Most education systems use both approaches. At the primary level

most use the non-tracked heterogeneous classroom. The best systems provide for remediation and enrichment in the classroom or sometimes in special extra classes designed for either purpose. Very handicapped or exceptionally gifted students are usually tracked in special classes or schools, although in modern practice every attempt is made to include both types of students in mainstream activities as well.

From the Junior secondary level on more and more tracking is introduced in most education systems. Those systems that are imbued with an egalitarian ideology attempt to minimize social and extra-curricular tracking by ability level, although tracking by interest is inherent in extra-curricular matters.

Systematic consideration of the tracking issue is beyond the capacity of this mission in the time available. However, four general options can be offered:

1. Remedial and enrichment materials should be provided to every school and teachers should be trained in how to use them as a matter of routine. Self-instructional materials, once a student is literate are most cost-effective and manageable.

2. An program to identify the exceptionally gifted student for special schooling or enrichment would probably return to the nation many times its cost over time. Serious consideration should be given to aptitude testing not only for this purpose but also for guiding the schooling and career development of the general population of students.

   Similarly a well designed guidance and counseling program would benefit the nation by serving the general as well as the gifted population.

3. Teachers should be given orientation on how to identify handicaps in children such as visual, auditory and intellectual disabilities. They should be briefed on how to bring these to the attention of parents, and how to enlist parents in remedying the disabilities. A flyer or handout for teachers to give to parents of handicapped children would be useful and relatively inexpensive.

4. Non-government organizations might be enlisted in helping to deal with the handicapped population as a major supplement to the education system.

L. Problem of Teacher Absenteeism

It is reported that teacher absenteeism is high and that teachers

often leave the classrooms when they have assigned seatwork or instructed the students to copy from the chalkboard. This further aggravates the problems of too little instructional time and inefficient instructional performance.

Several options can be considered:

1. Well designed, self instructional materials could be distributed to the schools to compensate for teacher absenteeism. Low cost materials for this purpose may make it feasible to do so on a national scale.

2. If a continuous assessment program were introduced whose achievement results were fed periodically to local or regional educational managers as a routine part of local Management Information Systems, teachers would be likely to feel themselves more accountable. Further, if the results were read chiefly for diagnostic uses, rather than to evaluate teachers, they would enable local managers including principals to provide more pointed assistance to classrooms. The attention that managers pay and the tangible help they give to improving classroom performance may boost teacher morale and may serve as a social incentive to improve attendance and time on learning tasks.

3. Training for headmasters and other education managers, particularly in personnel management and in instructional leadership, may result both in more time and better quality time on instructional tasks

SUMMARY OF CURRICULUM ISSUES

Key Issues	Options
A. Planning a 1 to 9 curriculum	1. Purposes of 1 to 9. 2. Accommodating more students. 3. Integrating and materials preparation.
B. Crowded primary curriculum	1. Basic skills in 1 to 3. 2. Expand day 3. Improve instruction 4. Program instruction
C. Curriculum lacks integration	1. Table scope and sequence from beginning. 2. Use earlier tables to start with.
D. Materials and methods lack instructional efficiency	1. Teachers can't invent. 2. Teachers aren't taught to invent.
E. Active Learning	1. Teachers haven't learned subject or pedagogy well. 2. Haven't learned specific instructional methods. 3. Lack detailed materials.
F. Govt textbooks are not synchronous with 1984	1. Speed textbook production. 2. Give texts to private sector. 3. Contract for texts. 4. Govt sets and enforces standards.
G. Govt produces texts for 20%	1. Produce texts for fewer subjects. 2. Raise price and subsidize poor. 3. Send by post to one responsible person. 4. Increase availability of approved textbooks.
H. No continuous assessment	1. Achievable objectives. 2. Provide pool of good items. 3. Train teachers to write items.

I. National test coverage	1. Subject achievement through Active Learning Strategy. 2. Test only for agreed objectives. 3. Test for process.
J. Localization of curriculum	1. Local examples and subjects. 2. Keep from interfering with basic skills. 3. Integration and production of new materials. 4. Developing local capacity for integration and production. 5. Private sector.
K. Individualization	1. Remedial and enrichment materials. 2. Identify exceptionally gifted. 3. Familiarize teachers with handicapped symptoms and remedies. 4. Enlist help of NGOs.
L. Teacher Absenteeism	1. Use group self-instructional materials. 2. Incorporate continuous assessment in local MIS. 3. Provide management training to principals and other officials.

APPENDIX A: Persons Interviewed

Prof. Dr. Moegiadi MA
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Balitbang Dikbud

Mr. A.F. Tangyong MA, MA
Head of Curriculum Development Center
Balitbang Dikbud

Dr. Gunadi Tanuputra MA, MPhil
Curriculum Development Center
Balitbang Dikbud

Mr. Frans Tarera
Head of Textbook Division
P.T. Gramedia

Drs. Soewono
Director of Primary Education
Ministry of Education

Prof. Dr. Conny Semiawan
Rector IKIP Jakarta

Prof. Dr. Hasan Walinono
Director General of Primary and Secondary Education
Ministry of Education

Drs. Winarno Hamiseno
Director Secondary Education
Ministry of Education

Drs. Taya Paembonan
Head of Textbook Center
Balitbang Dikbud

Drs. Yahya Umar
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Prof. Dr. Harsha Bachtiar
Head of Balitbang Dikbud

Mr. Koentjono
Director of Textbook Production
P.N. Balai Pustaka

Prof. Dr. Setiadi

Rector, Open University

Dr. Moch. Amien
Dean of Graduate Programs
IKIP Yogyakarta

Dr. James Spillane
Head of Research Center
IKIP Sanata Dharma
Yogyakarta

Dr. Ed VandenBerg
Science Education
Univ. Satya Wacana
Salatiga

Dr. Norm Rifkin
Head Education and Human Resources
USAID/Jakarta

Mrs. Gartini
Education and Human Resources
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Head of Curriculum Section
Sub Directorate of Innovation
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Mr. Magfuri
Head of Sub Directorate
Upper Secondary Education

Mr. Ramidjo
Head of Curriculum Section
Sub Directorate, Lower Secondary Education

Mr. Riyanto
Head of Lower Primary Sud Directorate
MOE

Mr. H. Pangaribuan
Head of Curriculum Section
Sub Directorate of Upper Secondary Educ.
MOE

Mr. Chaerudin
Penilik TK/SD Kantor Depdikbud
Kecamatan Cianjur

Mr. Komara
Penilik TK/SD Kantor Depdikbud

Kecamatan Cianjur

Mr. A. Saepudin
Headmaster
Sekolah Negeri Cimatis
Cianjur

Ms. Nurhayati
Teacher
Sekolah Negeri Cimatis
Cianjur

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Dr. Soelistyo
Kepala Kantor Wilayah
Depdikbud
Yogyakarta

Drs. M. Th. Slestari
Head of Dikgu Division
Yogyakarta

Drs. Adnan Zaid
Staff, Dikgu Division
Yogyakarta

Dr. Simon Ju
Consultant, IEES Project
Balitbang Dikbud

Mr. Erry Oetomo
Staff, Curriculum Development Center
Balitbang Dikbud

Mr. Siskandar
Staff, Curriculum Development Center
Balitbang Dikbud

Mrs. Elle Yolaelawati
Staff, Curriculum Development Center

Mr. Soebroto
Head, Sub-Directorate of Secondary Education
Ministry of Education

Mrs. Atikah Pribadi
Lower Secondary School Supervisor
Regional Education Office, Jakarta

Dr. Suke Silverius
Staff, Examination Center
Balitbang Dikbud

Mr. S. Belen
Staff, Curriculum Center
Balitbang Dikbud

Audrey Aarons
Education Consultant
The British Council

Mr. Tony Somerset
Education Consultant
World Bank

Representative of
Mr. Jesudass Sebastian
Manager, PT Pustaka Ilmu

Drs. Frans M. Parera
Divisi Penerbitan Buku
Gramedia

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APPENDIX C: Low Cost Learning: Supplement to an Analysis of the Status of Curriculum Reform and Textbook Production In Indonesia

LOW COST LEARNING

SUPPLEMENT

TO

AN ANALYSIS OF THE STATUS OF

CURRICULUM REFORM AND

TEXTBOOK PRODUCTION

IN INDONESIA

March 1990

by

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This work was performed under the auspices of the Improving the Efficiency of Educational Systems Project (IEES) through a contract between Florida State Univ. and the Office of Education in the Bureau for Science and Technology AID/Washington, and USAID/Jakarta.

Introduction

Indonesia is one of the world's great nations. Its enormous population places it fifth after China, India, the USSR and the United States. Its great natural resources and its new-found national political spirit promise a real chance to sit at the table of modern nations. It stands at the threshold of the take off stage.

Indonesia's great development leap will take place in the midst of the world-wide explosion of information, communications and technology. To compete in the modern world Indonesians will need knowledge, skills and attitudes that enable them to produce, sell and distribute goods and services around the world more efficiently than others. Indonesia's cheaper labor and abundant natural resources are temporary advantages. In the near term they will need to be supported by increasingly more and increasingly better educated human capital--managers, teachers, engineers, etc. They will soon need to be replaced by even more and better educated human capital.

But Indonesia has one of the world's most difficult national development situations. Its natural resources and population are widely dispersed. Its people are extremely diverse, only newly emerging as a united polity, and are generally at an early state of educational attainment compared to its trading partners and competitors in Europe, America and among the East Asian Tigers.

Indonesia is faced with very costly challenges both in development of its physical and human resources. It must allocate its investments with maximal wisdom and efficiency if it hopes to develop its human and physical capital in synchrony.

Indonesia has the enormous task of educating some 30 million students while in the process of developing and refining an education system that can do so. It must develop, produce and distribute instructional materials in vast quantities as it trains teachers on a massive scale. Hence the interest in low cost learning.

Of Indonesia's 187,000,000 people about 80% or 150,000,000 are engaged in agriculture. As the nation develops economically agriculture will become more mechanized, and people will leave farms for other endeavors. Many will take up agriculturally related jobs such in food and fiber processing, transport, maintenance, agro-chemicals, and so forth. Others will engage in the service and manufacturing activities that small and mid-size enterprises and growing towns need. If the pattern of development in Indonesia is similar to that experienced in the other agriculturally rich nations, agro-business development will fuel much of the growth in the commercial and industrial sectors.

The society will change from peasant farming to a faster-paced, more complex economy that is responsive to the demands of local, national and international customers. Because of the explosive growth of technology throughout the world, the changes in the Indonesian countryside are likely to be more rapid and will accelerate more rapidly than in nations that became industrialized in a slower age. New forms of organization that foster entrepreneurship, invention and investment will emerge. New skills, knowledge and attitudes will be needed both to perform well on jobs and to cope with the increased complexities of daily life.

Many of the new requirements are already predictable. Planning and construction skills, equipment maintenance, management, and financial knowledge and skill are bound to be needed in abundance. Scientific, technological and mathematical knowledge will be at a premium. Just as important will be the need for highly skilled management and leadership to make more efficient use of costly machinery and skilled labor.

Every society at the take-off stage needs to balance its investment in physical and human capital. On the one hand it needs to maintain the advantage of a cheap labor force until it can build enough surplus wealth to create more demanding jobs. On the other hand, it needs to encourage the development of higher level capabilities to attract investments and to fulfill the demands of newly emerging complex jobs.

It is in the nation's interest to act as efficiently and scientifically as it can to apply its scarce resources optimally to the development process. The suggestions that follow are more or less generally applicable, but how they and other ideas can be applied should be determined by empirical study. A thorough investigation should be made of five key topics that will affect the development of human resources:

* the current work situations in the Indonesian countryside, or more accurately, in the many Indonesian countrysides,

* the emergent requirements for new human capabilities,

* the real situation in rural schools, particularly in multi-grade classrooms,

* the conditions in other organizations and institutions that tend to promote or hinder human development,

* the emergent needs for new forms of organization that will facilitate orderly development.

Enlisting the Private Sector

In the considerations that follow our focus will often be on

enlisting the private sector in helping to provide educational materials and methods. As will be seen below, there appears to be a problem that will need to be overcome if the private sector is to participate to the extent that it could. Currently the education law stipulates that the government will furnish each child with textbooks. It appears that the government cannot afford to do so, and it is hoped that the private sector will make up the deficiency. However, the private sector has concentrated its distribution in densely populated and more affluent areas where enough parents can buy books to make it profitable.

Typically publishers' representatives determine how many books can be sold in an area and then produce enough books to supply that demand. The costs of marketing, the uncertainty of demand and the anticipated difficulties of distribution to many areas limit the size of printings. The selling price for textbooks is higher than it would be if the publishers could reduce their marketing costs and be assured of a wider market.

If the government could contract with publishers to supply textbooks in larger stipulated numbers they could sell them at substantially lower prices than they now must charge. If contracting of this sort is not feasible, other mechanisms may have to be developed to enlist the private sector. Some mechanisms are suggested below in conjunction with discussion of various classes of low cost learning materials and methods.

Concept of Low Cost Learning

Low cost is a relative term. Low cost in the United States or Sweden which spend hundreds of dollars per student is substantially more than low cost must be in Indonesia. Currently Indonesia spends about $2.40 per pupil for non-teacher recurrent costs at the primary level. It produces only enough government developed textbooks for 20% of its primary students. Some report that the ratio is more like one textbook per subject for six, seven or even thirteen students.

Privately produced primary textbooks sell for about R1000 or R1100, about $ .55 to $ .60. About 11 subjects are taught in primary schools. If a family bought 11 such texts for each child the cost would be $6.00 or $7.00 already far more than the government allocates for such costs per pupil.

Any instructional device, text or method that conveys information to students at least as effectively and at less cost than current textbooks can be classified as low cost. For example, Interactive Radio Instruction which can cost less than $ .30 per pupil per subject would be about half as expensive as the typical privately sold Indonesian textbook, and probably a good deal more effective.

Some Fundamental Considerations

Three key problems bedevil the provision of learning materials in Indonesia. One is the government's inability to provide sufficient textbooks, teachers guides and other teaching aids. The second is the difficulty of distributing learning materials throughout the archipelago. A third is the problem of equity.

It is reported that most pupils in the more densely populated regions have textbooks by means of a combination of government and privately supplied materials. The largest single private publisher reported sales of only 50,000 copies per subject per year, and half of those are sold in Jakarta. A second publisher reported sales of about 30,000 copies per year, again with half being in Jakarta. Insufficient time prevented a more complete survey. Estimates of the number of private publishers vary from five or six to thirty or forty.

If we estimate that each of the private publishers averages 30,000 copies per subject per year, the low estimate is 150,000 and the high estimate is 1,200,000 copies per subject per year.

The government has produced about 81,000,000 primary textbooks since 1985 for the five core subjects. About 35,700,000 were produced in 1984/1986 and 37,500,000 in 1987/1988. Since then 5,200,000 and 2,800,000 were produced in the last two years. These books were produced for five core subjects rather than for all 11 subjects taught in primary school. Currently there are about 27,000,000 primary school pupils.

Government supplied books are loaned to the students. Some are sold at a relatively low price in the bookshops. There also appears to be a secondary market for textbooks. Undoubtedly many texts are passed down to younger relatives.

If one assumes a five-year life span for the textbooks (probably too high) then most of those 81,000,000 books may still be in use. If private sales were about 1,000,000 a year per subject for the five core subjects then another 25,000,000 books may be in circulation, thus totalling 106,000,000. To supply every child with the books for the five core subjects would require 135,000,000 books. Thus about 75% of the books needed for the core subjects may still be in the schools. This estimate assumes of course that all the books got to the schools and that there were virtually no losses since 1985. If one assumes a four year life span, probably a more realistic figure, then 85,000,000 million core textbooks or 63% of the needed number may still be in use.

In order to provide each child with one textbook in each of the five core subjects it would be necessary to produce about 34,000,000 million books a year, each year to replenish the supply as one fourth of the books go out of service. This estimate assumes a level enrollment.

If we assume the private sector has produced a million books for each of the non core subjects each year since 1986, then a total of 24,000,000 books were produced. If one fourth have gone out of service then 18,000,000 may still be in use. A total of 162,000,000 books are needed to provide each child with one text for each of the six non-core subjects. Since 18,000,000 books may already be in use, 144,000,000 would be required.

To keep the supply of non core books replenished once the books were in place would require about 40,000,000 books a year. Thus, to keep the total supply of core and non core texts replenished would require publication of 74,000,000 books each year. At about $ .60 per book there is a potential market of a gross value of about $44,000,000 per year.

Distribution Problems

It is reported that many of the books that the government has produced have not reached the schools. The magnitude of the problem is unknown. Some remain in warehouses because it is too expensive to distribute them. For example, most distribution in Irian Jaya would need to be done by expensive air transport. Others seem to have found their way into the private market.
The whereabouts of others seems to be unknown.

A particular problem has been the failure to distribute teachers guides or manuals even when some of their associated textbooks have found their way into schools. We were unable to obtain figures for the numbers of teachers guides which have been published but it is reported that often only one teachers guide per school is distributed rather than a set of guides for each teacher.

This problem will be a particularly grave one in the Active Learning Program since that is a strategy that will place great subject matter demands on the teachers. It appears to us that only very highly detailed teaching materials will be able to meet the demand for knowledge that the strategy will promote.

Teacher training alone will probably not be sufficient to meet the needs of the program. It has been reported by one of the expatriate teacher training specialists that typically teachers ask where they will get the new ideas. Realistically, not enough can be generated from small local support groups. They should be supplied by means of well detailed teachers guides and students learning materials.

It was reported that as many as 80% of teachers hold second and third jobs, often as private tutors or teachers in private schools. They are too tired and preoccupied to be expected to plan lessons, prepare readers or other teaching aids. These people need highly detailed and prescriptive guides in order to do a fair job in the schools. Moreover, their students need to be supplied with good

quality texts and reference materials if they are to pursue the quest for information implied by this program. Unless the guides and texts are made available the Active Learning Program stands a good chance of floundering.

Study of Marketing and Distribution

A serious study should be made of the distribution problem, perhaps focussing on strategies that might help to solve it in various regions. It may be that local publishing and printing, or radio instruction are the most feasible and cost-effective methods. It may be that a system of peddlers on foot who distribute all sorts of small household goods could be used as a mode of distribution for learning materials as well.

More generally a study should be made of the marketing potential for private publication and distribution of learning materials. The study should not be confined to the problems of distribution alone, but should include an analysis of the potential for a full range of products whose introduction might help to overcome specific distribution problems. The study should determine the potential market not only for low-cost materials but also for higher end items which could help to attract local investors and possibly help to subsidize or develop the low cost market. The study should include:

* the full market potential for textbooks at all school levels, and for

* alternative learning materials like those described below,

* teaching and training aids,

* self-help manuals,

* industrial and commercial manuals and handbooks,

* trade books,

* trade journals, professional books and journals,

* computer programs,

* learning equipment like interactive video, CD ROM, hand held learning devices, audio-visual equipment and learning programs,

* an analysis of the market and of current and potential competition by geographic location and demographics,

* strategies for entering the market and expanding market share,

* joint venture possibilities,

* legal requirements and constraints,

* shipping and warehousing facilities and costs,

* communications, electronic publishing, desk-top publishing, multiple site publishing and costs,

* financing and credit practices,

* an analysis of the existing and potential secondary market.

* costs of legal, accounting and other business services.

The Equity Problem

The government has tried to distribute a disproportionately greater number of free books to poorer districts in an effort to increase equity. This however, probably aggravated the problem of poor people in the more affluent districts. Since the government can distribute only about 20% or 25% of the books needed, it must be assumed that the remainder will be bought from private publishers. Even if all government books could somehow be shunted to poorer students it would leave many poorer ones unserved.

The average per capita income is about $360. This means that much of the population must live on less than $1 a day. Many must survive on an income well below this. A poor family who had to buy a full set of 11 texts at R1000 in addition to paying for uniforms and school contributions would be severely taxed.

In practice poor children often are lent books by teachers or share them with others. Where they are available they can resort to second hand books to some extent. Nevertheless the problem of inequity persists and any scheme that would somehow make learning materials more cheaply available would be a boon.

The solution may lie in the provision of cheaper learning materials, in some methods or schemes that enable parents to purchase them at affordable prices, in local self help schemes, in closer cooperation between government and the private sector or a combination of these.

Varieties of Possible Low Cost Learning Methods and Materials

Low cost learning materials and methods will be divided into two general classes: 1) those that are offered by the government or private commercial firms and 2) those that can be made locally using local resources and labor.

Textual Materials and Educational Radio

The government has produced as much as 49,745,000 textbooks in one year for all levels of schooling. Its presses are reported to be the among the largest in the nation. The low publication of texts in the last two years is attributed not to printing incapacity, but to slow production and approval of manuscripts, on the one hand, and inadequate funds, on the other. In the meantime, as has been stated in the main body of this report, private publishers have jumped into the breach. They are distributing textbooks that follow the sequence of topics found in the 1984 curriculum outline. Teachers appear to prefer them because it is easier to follow the published sequence than it is with some of the government produced textbooks that still follow the 1975 sequence of topics.

The number of textbooks published by private industry is very small compared to the need and their geographic distribution has been very limited. It appears that the private publishers are catering to the most affluent segment of the market. Moreover, they may have limited their distribution to the least expensive routes.

One ingredient of cost is marketing. Salesmen visit schools and get estimates of orders. The books are sent to wholesalers and then distributed to bookshops which sell them to schools and individuals. Schools generally receive a discount of as much as twenty percent. Bookshops themselves receive discounts of from twenty-five to forty percent depending on volume of sales. One publisher reported that they make the school discount mandatory. The bookshop in this case may have as little as five percent markup but enjoys a relatively large volume sale.

The largest publisher estimated that it could sell a 64 page textbook for as little as R600 if sales were guaranteed, that is if marketing were eliminated and large runs were assured.

Eight other, lower cost options are available. These are 1) teachers guides, 2) learning modules, 3) printed classroom posters, 4) handcopied classroom posters, 5) newsprint texts, 6) newsprint pamphlets and 7) newspaper supplements, 8) shared materials. A ninth option, local printing may or may not be cheaper, but might help to solve the distribution problem.

1. Teachers guides

One option is to distribute to remote areas only highly detailed teachers guides for each subject rather than textbooks. In this case the children would use minimally costly notebooks or low cost workbooks. It is necessary to make the guides very detailed so that portions can be copied for seatwork and homework. Various devices have been used in order minimize class time for writing on and copying from the blackboard:

* The teacher, an older student or a volunteer aide copies the relevant passages onto the blackboard before each day or at the beginning of each week. Students copy them down at the end of each period.

* The teacher or an older student reads the homework and seatwork assignments aloud to the pupils who copy them down after the school day.

* The homework and seatwork assignments are duplicated in the school or photocopied locally and distributed in a packet or piecemeal to the pupils.

2. Learning Modules

Learning modules are lower in cost than textbooks. The learning modules are self contained usually covering one class period's worth of work. They have initial stimulus materials, questions, learning and practice exercises, reviews and tests.
They are cheaper than textbooks because only one or a few modules are needed for each lesson rather than a text for every pupil. As one pupil or a group of pupils works on one module, another works on a different module and still others work on other modules.

A school is equipped with one set of modules that are used interchangeably by the students. The teacher uses one complete, detailed guide for the direct teacher delivered portion of the instruction. A school kit containing about 500, 20 page modules covers the four basic subjects of language, math, science and social science for all six primary grades. Thus, 10,000 pages are sufficient to deliver a basic primary curriculum. If a school has 200 pupils, each equipped with four 100 page textbooks to cover the four basic subjects, they use 20,000 pages for the same purpose.
The modular approach is not cheaper for schools with fewer than 100 pupils, although it may be more effective. It may be the most effective approach in multi-grade schools where the teacher must attend to more than one grade. Students can carry out complete self-instructional lessons with only part-time attention from the teacher.

3. Instructional Posters

Printed instructional posters are less expensive than modules. About 50 posters are enough to cover instruction in one subject in one grade. Thus 200 posters cover the four basic subjects and 1200 posters cover them for six grades. The posters contain the instructional stimuli, for example, letters, numbers, signs, illustrations that are large enough to be visible to a whole class. At the bottom they give instructions to the teacher on how to use the material in various ways for a series of lessons. Students use

workbooks or notebooks in conjunction with the posters.

A number of posters can be displayed at once. Students can copy homework instructions for several days before or after classes. Seatwork assignments are directly displayed. Since posters are not handled by the students, they can be expected to last a long time, another feature which makes them very low cost.

One publisher estimated that a poster on good quality stock could be sold for R300 or about $ .16. A school could be equipped with a complete set for $200, plus the costs of notebooks or workbooks. If the school has 200 students their textbooks at current commercial prices would cost R 800,000 or about $ 440. As the number of students in school a rises the unit cost of posters falls, but the costs of textbooks do not. For a school of four hundred students the unit cost of instructional posters is $ .50 per child. The cost of textbooks would be $ 2.20.

One publisher estimated that a textbook could be marketed for as little as $ .33. It was also estimated that with guaranteed sales a newsprint poster could be sold for as little as $ .04. At the price of $ .33 per textbook and $ .04 per poster, the relative unit costs would be $1.32 for the four basic textbooks per pupil as compared with $ .12 per pupil in a school of 400 students. In a school of 100 students the unit price of the posters would be $ .48 per pupil.

Handcopied Classroom Posters

A book size set of posters could be distributed to schools. If large enough writing surfaces, perhaps made of local materials, are available, the posters could be copied by hand. At two posters an hour it would require 600 person hours. Older students could be assigned to the task. With 20 students working at the task the job would take 30 hours. They could prepare enough for one week's instruction in an hour.

Newsprint Texts

Six textbook pages can fit comfortably on one newspaper page. A three sheet, 12 page newspaper could carry 72 textbook pages. One publisher estimated that such a paper could be sold for 300 Rupiah if a large scale market were assured. Parents or older students could cut the pages out and bind them with staples, glue, wire, etc. To preserve them for resale in a secondary market, pupils might use only one page or a few pages at a time. At R 300 a textbook would cost less than a third of the current commercial price.

Newsprint Pamphlets

The cost of printing a page of text on relatively good quality paper is between 6 and 8 Rupiah depending on the size of the printing. Four pages of text on one sheet of newsprint could be sold in pamphlet form for about 30 Rupiah or 1.7 cents. At this rate a 72 page textbook would cost 540 Rupiah. This method has the virtue that parents could spread the cost over an 18 week period. At this rate even very poor parents should be able to afford to buy textbooks. A set of four core pamphlets would cost 120 Rupiah or 6.7 cents a week.

It should be possible to preserve the pamphlets because each would be handled by the student only for a few days. A kind of revolving fund system could be instituted by developing a secondary market. If children and parents took care to preserve the pamphlets it should be possible to accumulate a full set that could be turned in to the school or some other institution for a refund, perhaps of 50% of the original price. They could then be resold at say 80% of the retail price. They might be recycled four times, each time fetching 50% of the purchase price and being resold at 80%. The fourth time the purchase price would be about 17 Rupiah per pamphlet. The price of a total set of pamphlets for the four core subjects would be R 1224 or $ .68.

If it is infeasible for the schools to undertake such a recycling scheme, local booksellers could be encouraged to do so. If there are no booksellers, teachers, parents or even older students could embark on it as a business. It would not only provide a service, but would provide an opportunity to run a business that would probably be profitable. The difference between the 80% resale price and the 50% payment for the returned pamphlets would probably pay for the costs of running the business and a profit as well. The actual repurchase price and resale price could be set at wherever necessary to run a profitable business as long as the resale price were sufficiently below the original retail price to make it attractive.

Such a revolving scheme would represent a kind of savings plan for parents. Parents who buy a set of pamphlets for the four core subjects at the original price would spend R 2160 in the course of a year. If they resold them at half price they would realize R 1080. If they purchased a full set of 11 subjects at R330 a week for 18 weeks they would lay out R5940, but would get back R2970 in a lump sum. If parents used the pamphlets for five successive children, the effective cost per textbook per child would be R108 or 6 cents.

The poorest parents would probably be able to buy the pamphlets at a fully discounted rate of about 5 Rupiah, a price that is likely to be affordable to everyone.

We have gone into some detail about such a scheme because it probably represents the most practical way to achieve equity in the distribution of learning materials. The secondary market is probably the way poor children get their textbooks today.

Newspaper Supplements

The government might encourage newspapers to publish and sell learning supplements by making approved textbooks available to them. Alternatively, the government might carry out an experimental program by contracting with newspapers to publish supplements in order to determine whether such a scheme would work. The government would be involved only to the extent of testing the method.

The supplement could carry six pages of text on each of four newspaper size pages; 24 pages of text would be enough for one week's instruction for four subjects in six grades. Currently a 16 page newspaper sells for R300. It is, of course, subsidized by advertising. If a four page supplement could be sold for R150, parents would need to buy 18 supplements to complete a 72 page text at a total cost of R2700. However, a parent with one child in each grade would pay the same amount for 24 texts. Similarly a parent with one child would be able to buy all 24 texts for the child's use as he was promoted through the grades.

At R2700 each of the 24 texts would cost R112.5 or $ .06.
The same considerations concerning a revolving fund or a secondary market for pamphlets would apply to these materials as well. The parents would be able to pay for all 24 textbooks in 18 relatively easy installments of R150 each.

The distribution need not be limited to the locations where newspapers are distributed. The supplements could be bought in bulk and distributed either by the government or commercial dealers. Conceivably a network of wholesalers, booksellers and peddlers could distribute them even to remote locations.

Shared Learning Materials

All the discussions thus far about textbooks or their equivalents in the form of newspaper supplements, etc. presuppose costs based on a ratio of one book to one pupil. If books are shared the costs will decrease. Thus if two pupils share a book the costs will be halved, and so on. If textbooks are shared the cost comparisons between textbooks, modules, and radio delivery will need to be adjusted accordingly.

Educational Radio

USAID has developed and tested high quality primary education radio programs in mathematics and English as a second language. It is also developing a secondary science series. The program is called Interactive Radio Instruction because the broadcasts address the students as if a live teacher were delivering the material and allow for the students to respond.

The programs are optimally sequenced to allow for distributed learning, practice, feedback, reinforcement and the redundancy needed in case some broadcasts are missed. Necessary print materials are distributed as part of the general program. Teachers can be trained in one day to conduct radio sessions and to carry out supplementary and complementary instruction. The program has proven to be very popular with teachers, students and parents.

Evaluations indicate that learning effects are significantly higher when radio is used in the absence of textbooks than the learning effects achieved with textbooks alone. When radio is used where textbooks are also in use the effects are even higher. An important advantage of the Interactive Radio Instruction programs is that they are of uniformly high quality that is not diminished by variations in the ability or performance of teachers.

The average unit cost has been about $ .30 per pupil in nations with considerably smaller populations than Indonesia. Because central costs of adapting the programs to Indonesia, broadcast operations, maintenance and administration can be amortized over a larger population of students in Indonesia, costs can be expected to be even lower. School costs for radios, power, security and supplementary print materials would probably be about the same as elsewhere; these are the ingredients that limit cost savings, especially when print materials such as worksheets are used. A mental mathematics program which does not rely on print materials is proving to be very effective in Honduras where it is being tried out experimentally.

A feasibility study should be undertaken to determine how Interactive Radio Instruction can be applied in Indonesia and how cost effective it is likely to be. Its highly efficient instructional methodology promises to complement the Active Learning Strategy, its far ranging delivery capability promises to overcome such intractable problems as distribution in Irian Jaya and other sparsely settled, remote areas.

Local Materials and Methods

Cognitive facilitators

These form two broad classes. Methods requiring no physical aids or materials and those that need material components. The purely

methodological techniques are as follows:

Games and Simulations.

These are mainly group techniques to develop knowledge and skill. There is a wide variety of learning games that combine learning with enjoyment and excitement. Many of them can be organized so that they use both cooperation and competition to promote learning. Some can be played by a person alone or by two persons; others are more suited to teams. These include:

* Objective cognitive knowledge games like spelling bees can sharpen knowledge and skills. For example, in the spelling bee two more or less evenly matched teams take turns in trying to spell increasingly difficult words. Similar games can be played in any substantive area like religion, social studies and mathematics. For best learning results each team should be composed heterogeneously of fast, slow and average learners. Contestants or rivals from opposing teams should be evenly matched. Team scores are awarded. Players at each ability level can earn as many points for their team as at any other level of play. A meaningful prize such as a publicly displayed trophy should be awarded to the winning team. The teacher should explain the game to the teams well in advance of the contest, e.g., a week or a month, so that they can prepare and practice for it. The smarter learners should understand that it is in their interest to help the slower ones to perform well since all have equal potential to earn scores for the team.

* Another class of games focuses on creative and incisive verbal activities like songs, poems, stories and descriptive talks, riddles, anagrams, proverbs, maxims and epigrams. The point is to promote skills where there are no objective answers as in math or spelling. The pupils are encouraged to create interesting and pleasing experiences for their colleagues. These games create the opportunity for teachers to help to promote detached judgments based on the merits of the performances rather than on friendships, relationships and favors. Teachers explain why one performance is better than another, and then in subsequent contests expect individual pupils in the audience to justify and defend their judgments of their fellow students' performance.

* Games and contests that promote skills other than speed and knowledge form another category. These focus on such habits as accuracy, persistence, patience, precision. For example, in the game Simon Says the teacher or the students give very precise, unexpected or carefully worded instructions to the contesting teams. If the respondents fail to follow the directions exactly they drop out or lose points until one winner is left.

* Simulations of various kinds are used to sharpen perceptions and judgments. Case studies are constructed by teachers and students which embody problems that the students can judge independently or as members of teams. These include mock trials, formal debates requiring students to take both the side they favor and the side they oppose, discussions of simulated ethical problems, simulated altercations and problems that illustrate the logic of different points of view about the same objective events. Playwriting and acting fall within this category.

It is often asserted that students lose their reading skills in remote areas for lack of reading materials. In order to counteract this tendency students can be encouraged to write for themselves and others. In earlier times when this was a widespread practice among the educated classes, it was the principle source of reading matter.

Services that contribute value and promote learning.

* Students can contribute to their own and others' learning. Tutoring is the prime example of this class. Another example to promote a sense of neatness and responsibility is to assign pupils to clean schools. In Japan primary school children do all the school cleaning. Students can assist with record keeping, help to run crowded classes, substitute for absent teachers, tend school gardens, paint furniture, clean up and landscape school grounds, etc.

In the most specific learning activity of this class, students participate in group self-instruction. If the instruction is well designed, each student contributes by asking and answering questions that induce higher order thinking. For example students defend opinions, draw inferences and furnish the rationale for doing so, apply principles and new information to their own life situations, make and defend predictions, search for causes, etc. sharpening their skills in cooperation with fellow students.

* Students can be organized on a voluntary basis or in money making activities to manufacture goods or provide services. Students can be organized into cooperatives, partnerships or shareholding companies. They can make training aids such as maps and globes, science kits, drafting equipment such as T-squares, triangles and compasses, instructional posters, and so on. Junior secondary students can provide services such as bookkeeping, inventory control, letter writing and completion of forms for illiterates, run second hand book services, and so on.

Although the services students furnish are valuable and may be

lucrative, the principal reason for engaging them in these activities is to give them experience in business and business related activities.

* Apprenticeships and internships in commercial, industrial and agro-businesses, factories and workshops is another form of this kind of learning.

Perceptual and cognitive exercises

* A wide variety of perceptual and cognitive exercises are available. These include various memory training systems, various mental mathematics systems such as the Trachtenberg arithmetic calculation procedures, vocabulary building, perceptual training for accurate observation, map-making and orienteering. They also include such exercises as formulating ideas in pseudo languages and codes, condensed writing, staged tests of witnesses' observational accuracy, proofreading exercises, the rumor chain exercise, task analyses and training in press reportage and legal analysis.

The foregoing require no equipment, but taken together represent a formidable array of learning and development activities which can contribute significantly to both personal and social development. They are virtually without cost except for teachers guides and manuals. They are designed to reinforce basic cognitive learning and to make it applicable to life situations in interesting and practical ways.

Locally Made Low Cost Learning Materials

The idea of locally made learning materials is an old one. In general the responsibility has been placed on the teacher to design, collect and construct them. With some notable exceptions it has not been a spectacular success. As long as teachers are hard pressed to earn extra income they will not have the time to devote to these efforts. Moreover, few of them are likely to create the ideas or can take ideas to the point of effective organization, construction and production.

It is necessary to devise a strategy that is more effective than asking teachers to do the job. The greatest likelihood of success is to promote the activity as a money making local business. As long as it is conceived as being confined to each school to serve itself, the market is not large enough to sustain a business. But if a school and its community were to set up a business to produce and sell to other school and communities for school and individual and community uses, there is at least a market potential. Each school and its community can be encouraged to undertake a speciality.

All students can be involved in production and as they mature, in all other aspects of the business to give them experience that would otherwise not be available to them in a rural society. Conceivably regional marketing cooperatives could be set up to distribute the products.

Clearly such a business can not market a few leaves and pebbles. The range of products would be more sophisticated. It might include:

* instructional posters and charts,

* teachers guides,

* local textbooks or other learning materials like maps, globes, guides to local flora and fauna, local directories,etc.

* teaching-learning games like those modeled on Monopoly, Scrabble, the game of Equations, resource allocation games, conservation games, biological development games, business simulation games, etc. (Note: permission should be sought, and perhaps royalty arrangements need to be made if commercial games will be copied.)

* mathematics kits like scales illustrating negative numbers, the Pythagorean theorem, and other concepts that are clarified by proper visual aids, abacuses and other simple calculating devices, rulers, tape measures. As conditions mature, a business of this sort could graduate to the assembly of credit card size calculators and then more complicated devices,

* drafting equipment like drawing boards, triangles, T-squares, protractors, etc.

* science teaching materials like lab kits, test tubes and petri dishes, dissection scissors, scalpels, chemical packets, standard packages of materials to illustrate the properties of matter, balances, simple electricity kits, voltaic cells and batteries, etc.,

* botanical kits--packets of seeds, growing media, fertilizers, pest control products, wall charts illustrating the life cycle and structure and functioning of plants.

* nurseries for school gardens and other didactic purposes, For example, each child might be given the assignment to plant and grow a tree or a few trees of different types which would remain his or her own for life. As the tree and the child mature, the classroom instruction and practica could be suited to their stages of development,

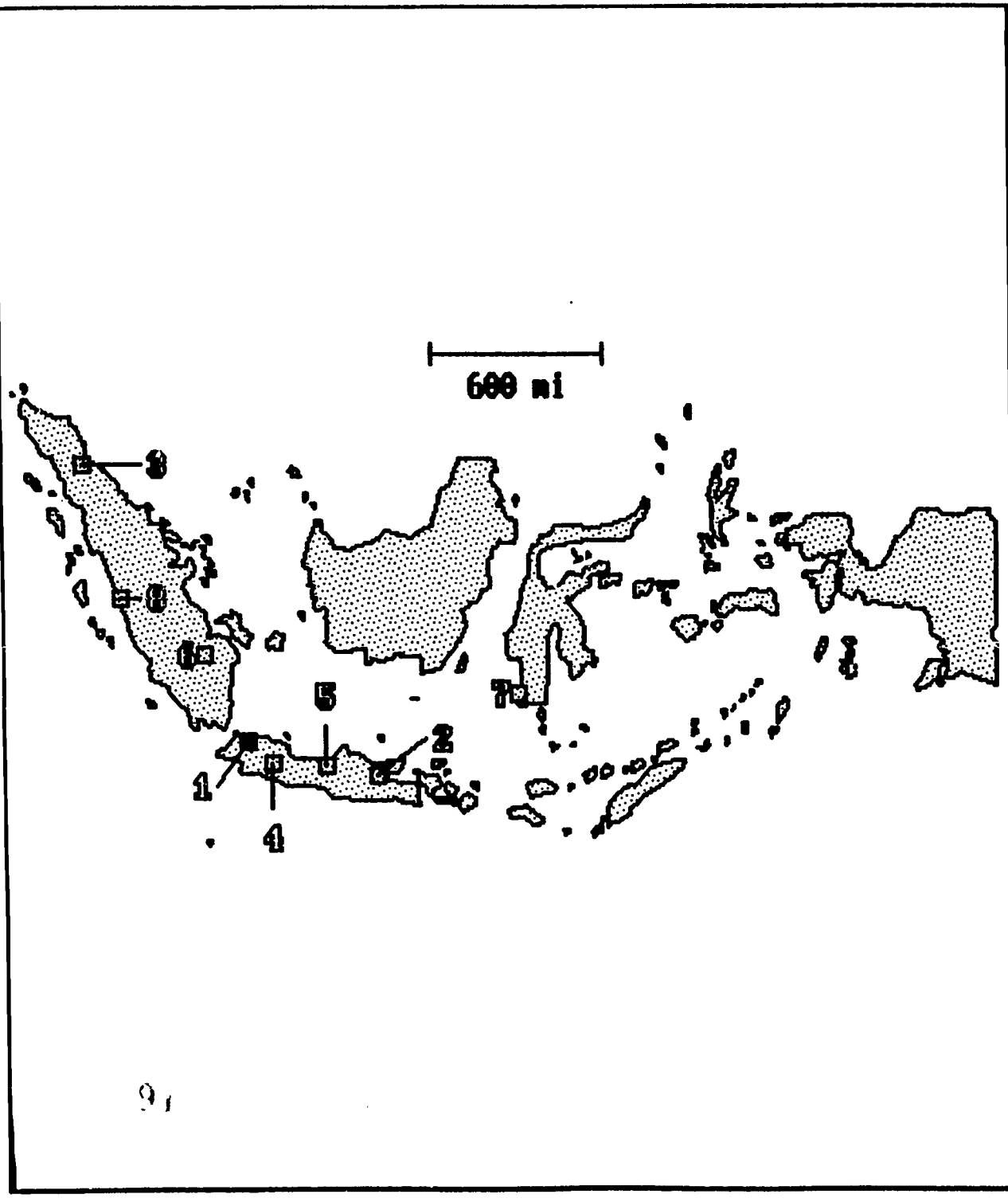
* small animal hatcheries and nurseries, Chicks, ducklings, rabbits etc. could be supplied to school projects, 4 H type student organizations, farmers and householders. Frogs, mice, etc. could be supplied to school and medical labs in the area.

Perhaps some of the funds that the central and provincial governments now devote to purchasing and furnishing school supplies, and laboratory equipment and supplies could be impressed to seed such a strategy. It will be necessary to furnish the schools with revolving credit. The schools and communities will need to buy basic tools, basic stock like plastics, sheet metal and springs from which to fashion the products, simple printing presses to use for publication, and detailed manuals and guides for teachers and others to use.

It will also be necessary to furnish them with business advice on bookkeeping, inventory control, marketing, and so on.
Possibly the Ministry of Cooperatives could be enlisted in such an effort.

The feasibility of this strategy should be studied to determine its potential manageability, markets, financial requirements, attractiveness to schools and community leaders and its potential cost/effectiveness as a learning venture and as a contribution to local development. If it is feasible, it may generate income, create business sophistication in developing areas and relieve the education system of the burden of supplying teaching materials and aids from centrally funded sources.

This strategy would be a practical way for the government to devolve responsibilities to the people, through the school system, the most widely dispersed government institution, while training the people to undertake their responsibilities effectively. At the same time Indonesia would be gaining the power of the people's participation in the next stage of their own development. Young peoples' education will be more relevant to their local conditions. They will be educated in the most practical possible way, by being involved in the development of their society while they gain the new skills that will be needed as development occurs. Finally, they will be producing the learning materials that will raise the quality of education itself as their contribution to future development.



INDONESIA

CITIES

1. JAKARTA
2. Surabaya
3. Medan
4. Bandung
5. Semarang
6. Palembang
7. Ujung Pandang
8. Padang